



# **IntraSwitch™**

## **6200 Series**

### **User's Manual**

Asanté Technologies, Inc.

821 Fox Lane

San Jose, CA 95131

[www.asante.com](http://www.asante.com)

1.800.662.9686

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# About This Manual

This section provides an overview of the IntraSwitch 6216M and IntraSwitch 6224 User's Manual. It describes chapter contents, document conventions, and intended audience.

This chapter contains the following sections:

- ☐ **Chapter Contents**
- ☐ **Document Conventions**
- ☐ **Audience**

# About This Manual

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## Manual Contents

This manual describes how to install and use the IntraSwitch 6216M and 6224 Ethernet switch.

This manual contains the following chapters and appendices:

| Chapter/Appendix                          | Description                                                                                                                                                           |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1</b> Introduction                     | Describes the unit, its package contents, features, switching capacity, management options, and factory default settings.                                             |
| <b>2</b> Installation                     | Describes the steps required to install the unit, connect it to the network, and configure it for management. It also describes how to install MII expansion modules. |
| <b>3</b> LED Indicators                   | Describes the front panel LEDs and their use.                                                                                                                         |
| <b>4</b> Setting Up For Management        | Describes management options and how to use them to provide connections to the unit.                                                                                  |
| <b>5</b> Console Management               | Describes how to perform basic management functions using the Local Management Interface.                                                                             |
| <b>6</b> Status Monitoring and Statistics | Describes how to view operating information and statistics, and how to prepare the unit for connection to an external traffic analyzer.                               |
| <b>7</b> Advanced Management              | Describes how to configure the Spanning Tree Protocol.                                                                                                                |
| <b>8</b> Web Browser Management           | Describes how to manage and monitor the IntraSwitch using a Web Browser.                                                                                              |
| <b>9</b> VLAN Management                  | Describes the IntraSwitch's VLAN options and explains how to configure the unit using those options                                                                   |
| Appendix A, Troubleshooting               | Provides some troubleshooting tips for isolating problems by using the unit's front panel LEDs.                                                                       |

| Chapter/Appendix                     | Description                                         |
|--------------------------------------|-----------------------------------------------------|
| Appendix B, Technical Specifications | Describes the IntraSwitch technical specifications. |
| Appendix C, Technical Support        | Describes how to contact Asanté Technical Support.  |

## Document Conventions

The following conventions are used for instructions and information:

- ❑ Commands and key words are in **boldface**.
- △ **Note:** Noteworthy information, which contains suggestions or references to other sections in the manual, is in this format.
- ▲ **Important:** Significant information that calls attention to important features or instructions is in this format.

## Audience

This manual uses terms and concepts associated with Ethernet networking and switches; it is recommended that the user of this manual have a basic working knowledge of local area networks (LANs).

**About This Manual**

# 1

## Introduction

This chapter is an introduction to the IntraSwitch 6216M and 6224 Switches. It provides an overview of the unit and describes its features, management and configuration capabilities, switching capacity, and factory default settings.

This chapter contains the following sections:

- ❑ IntraSwitch 6216M and 6224
- ❑ Configuration/Management
  - ❑ Switching Capacity
  - ❑ Chassis Design
- ❑ Features
- ❑ Package Contents
- ❑ Tools and Materials Needed
- ❑ Factory Defaults



# IntraSwitch 6216M and 6224

## IntraSwitch 6216M

The IntraSwitch 6216M is a high-performance, 10/100 Ethernet switch designed for building high-bandwidth workgroups and high-speed network segments. See figures 1-1 and 1-2.

The IntraSwitch 6216M has 16 fixed 10/100 ports, which includes two optional Asanté Media Independent Interface (MII) expansion slots, and built-in Web-based network management.

The two Asanté MII expansion slots allow for the addition of 100Base-FX or 10Base-FL connections.

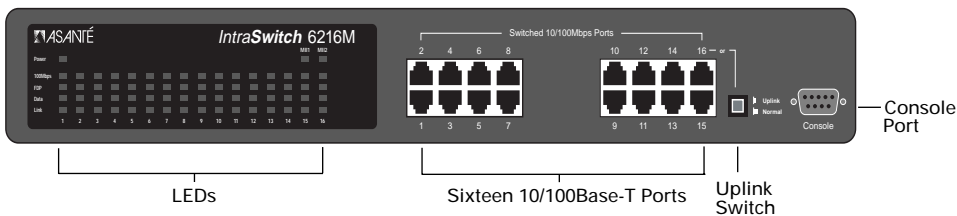


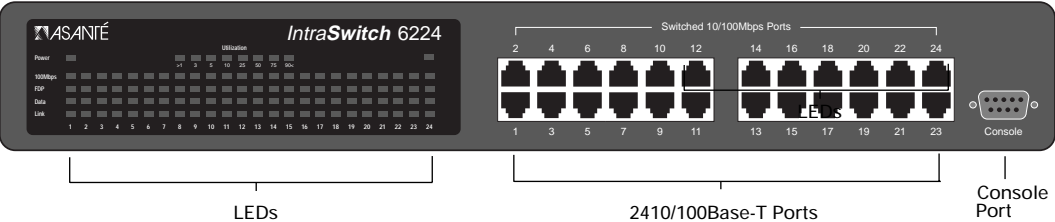
Figure 1-1 IntraSwitch 6216M Front Panel



Figure 1-2 IntraSwitch 6216M Back Panel

**IntraSwitch  
6224**

The IntraSwitch 6224 is a high performance 24-port 10/100 Ethernet switch. The IntraSwitch 6224 is designed for heavy duty desktop users, and features a backplane that is capable of supporting up to four Gbps of traffic. The 6224 can sustain full-duplex, full wire speed (148,800 packets per second per port) non-blocking throughput. The IntraSwitch 6224 also supports easy load monitoring via the front panel Led Utilization indicators. Only the IntraSwitch 6216M model supports the pushbutton Uplink selector, which eliminates the need for a crossover cable, and only the 6216M supports optional internal Asanté Fiber MII modules, which enable long distance connections. Otherwise, the IntraSwitch 6224 and 6216M have identical SNMP and RMON management features including the built-in Web Management Server.



**Figure 1-3     IntraSwitch 6224 Front Panel**



**Figure 1-4     IntraSwitch 6224 Back Panel**

## **IntraSwitch Components**

### **MII Expansion Slots**

The IntraSwitch 6216M has two Media Independent Interface (MII) expansion slots on the back panel. The expansion slots provide connections for the addition of various media access modules, including: 100Base-FX or 10Base-FL. See “Installing MII Expansion Modules” in Chapter 2 for more information.

### **Console Port**

The Console Port is a DB-9 serial port which may be used for console operations on the IntraSwitch 6216M and 6224. When configured, it can be used for Switch management and for serial download. See “Out-of-Band Management” in Chapter 4 for more information.

### **10/100 Ports**

The sixteen 10/100 ports on the IntraSwitch 6216M (twenty-four on the IntraSwitch 6224) provide connections for 10Base-T or 100Base-TX (Fast Ethernet) network devices. See “Connecting to the Network” in Chapter 2 for more information.

### **LEDs**

The LEDs on the IntraSwitch 6216M and 6224 indicate the AC power and status of each 10/100 port. The LEDs also indicate installation of IntraSwitch 6216M Asanté MII expansion modules, if installed. See “LED Indicators” in Chapter 3 for more information. The IntraSwitch 6224 also provides a convenient LED Utilization indicator for monitoring total backplane traffic volume.

### **Power Supply Connector**

The power supply connector provides the unit’s 100-240VAC power connection.

## Configuration/ Management

The IntraSwitch can be managed by any of the following methods:

- ☐ Out-of-band (via the console port)
- ☐ In-band Telnet
- ☐ HTTP server (Web browser management)
- ☐ SNMP-compatible network manager

### Console/Telnet Management

Through Console and Telnet operation, the IntraSwitch can be configured and managed manually using the Configuration Menu option. In addition to “Configuration,” options are provided for “General Information” and “Statistics.” See Chapter 5 “Console Management” for more information.

### Web Browser Management

The IntraSwitch has a built-in HTTP (Hypertext Transfer Protocol) server which facilitates management with any World Wide Web browser.

Refer to Chapter 8 for information on using a Web browser to manage the IntraSwitch.

### SNMP-Based Management

The SNMP (Simple Network Management Protocol) may be used to manage the IntraSwitch and any installed expansion module. Any SNMP-based network management application such as Web-based management software can be used. Refer to Chapter 4 and to Chapter 8 for more information.

## Switching Capacity

Each 10Base-T/100Base-TX port can forward Ethernet minimum-sized 64-byte packets at the maximum attainable rate of 14,880 or 148,000 packets per second (pps).

The IntraSwitch fully supports the 802.1d transparent Ethernet bridging standard. IEEE 802.1d compliance provides automatic address learning, packet filtering, protection against corrupted frames and fragments, and the Spanning Tree Protocol.

## Intelligent Forwarding

The Asanté switching engine supports automatic *fragment free* packet forwarding. Fragment free switch mode allows the switch to make the fastest possible switching decisions without forwarding runt packages on the network. The switch automatically drops (or filters) illegally short packets known as *runts*, which prevent bad packets from propagating across segments. Runts are usually the result of packet collisions on a congested network.

The Asanté switching engine also supports *store and forward* switching. It will automatically choose the safest and fastest method of switching if the source and destination are at the same speed. If the speeds are different, such as for a 10Mbps workstation connected to a 100Mbps server, the switch will buffer and read the entire packet, perform a data validity check, then forward the packet at the new speed. With Asanté Intelligent Forwarding your FriendlyNet Switch will automatically pick the best and fastest switching method for you.

△ **Note:** Intelligent Forwarding is an automatic feature of the IntraSwitch and cannot be altered by the user.

## Chassis Design

The IntraSwitch chassis is rack-mountable and is 1.5 RU (rack units) high.

▲ **Important!** Do not remove the IntraSwitch's cover. This will invalidate the Asanté Limited Lifetime Warranty. Refer service to qualified service personnel.

## Features

The IntraSwitch has the following features:

- ❑ 16 (IntraSwitch 6216M) or 24 (IntraSwitch 6224) fixed, 10/100 switched ports with RJ-45 connectors.
- ❑ Two optional Asanté MII expansion slots (IntraSwitch 6216M only), which replace ports 15 and 16. The slots accommodate 100Base-FX, and 10Base-FL modules.
  - △ **Note:** Using the Asanté MII Module will disable the respective front panel 10/100 ports 15 or 16.
- ❑ HTTP server which provides Java-enabled front panel view and SNMP management and configuration via any supported World Wide Web browser
- ❑ Telnet (in-band) and Console (out-of-band) management
- ❑ Support for 8,192 MAC addresses per unit
- ❑ Full duplex support on all ports
- ❑ NWay auto-negotiation on 10/100 ports
- ❑ Full 100Mbps wire-speed, non-blocking packet transfers for total throughput of 1Gbps per unit (IntraSwitch 6216M) or 4Gbps per unit (IntraSwitch 6224)
- ❑ BootP and TFTP support
- ❑ RMON support (1 group)
- ❑ MIB II, Bridge MIB support
- ❑ Private MIB support (provides IP-to-port mapping)
- ❑ 802.1d Spanning Tree support

## Package Contents

The IntraSwitch is shipped with the following items:

- ❑ (1) IntraSwitch Ethernet switch
- ❑ (1) power cord

- ❑ (2) rack-mounting brackets
- ❑ (16) standard Phillips screws
- ❑ (1) MII cover bracket (IntraSwitch 6216M)
- ❑ (4) Self-adhesive rubber feet
- ❑ (1) User’s Manual (this book)
- ❑ (1) Registration Card
- ❑ (1) Quick Install Card

▲ **Important!** If you are missing any of the items listed above, contact the dealer from whom you purchased the unit.

Tools and Materials

Some tools and materials that are not supplied with the IntraSwitch are needed to connect it to an Ethernet network. The table below lists the tools and materials required for connecting devices to the IntraSwitch’s ports and for rack-mounting the unit.

△ **Note:** For specific instructions on connecting network devices to the IntraSwitch, see “Connecting to the Network” on page 2-6.

Table 1-1 Tools and Materials Required

| Action                                           | Tool/Material Required                                                                                                                                  |
|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connecting 10/100 ports                          | Standard Category 5 UTP <b>straight-through</b> cable with RJ-45 connectors.<br>Standard Category 5 UTP <b>cross-over</b> cables with RJ-45 connectors. |
| Connecting 100Base-FX port (optional MII module) | Dual 62.5/125 micron graded-index multimode fiber-optic cable fitted with <b>SC</b> connectors.                                                         |

| Action                                           | Tool/Material Required                                                                          |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Connecting 10Base-FL port (optional MII modules) | Dual 62.5/125 micron graded-index multimode fiber optic cable fitted with <b>ST</b> connectors. |
| Connecting to the Console port                   | Straight-through RS-232 cable with a 9-pin male D-subminiature connector.                       |
| Rack-mounting the IntraSwitch                    | Phillips screwdriver for mounting the two rack brackets on the unit.                            |

## Factory Defaults

The IntraSwitch is shipped with the following factory default settings:

Table 1-2 Factory Default Settings

| Configuration      | Default Setting                                                             |
|--------------------|-----------------------------------------------------------------------------|
| IP address         | 0.0.0.0                                                                     |
| Subnet Mask        | 0.0.0.0                                                                     |
| Default Gateway    | 0.0.0.0                                                                     |
| Switching Mode     | Intelligent Forwarding (Automatic Fragment Free/Store and Forward)          |
| 10/100 Ports       | Auto-negotiation enabled; auto-negotiates to 10Mbps or 100Mbps, half duplex |
| Spanning Tree      | Enabled                                                                     |
| BC Storm Threshold | 7000 packets per second                                                     |
| Console Baud Rate  | 9600 Baud                                                                   |
| Password           | Asante                                                                      |





# 2

## Installation

This chapter explains how to install, connect, and configure the IntraSwitch 6216M and 6224 to work with your network. It also explains how to install an MII expansion module in the IntraSwitch 6216M.

This chapter contains the following sections:

- ❑ Installation Guidelines
- ❑ Installation Overview
- ❑ Rack Mounting/Desktop Placement
- ❑ Installing Asanté MII Modules (IntraSwitch 6216M Only)
- ❑ Connecting Power
  - ❑ IntraSwitch Power Sequence
- ❑ Connecting to the Network
- ❑ Configuring for Management

# Installing the IntraSwitch

---

## Installation Guidelines

### Power Requirements

The source electrical outlet should be installed near the IntraSwitch, be easily accessible, and be properly grounded.

Make sure the power source adheres to the following guidelines:

- ☐ Voltage range: 100 to 240 VAC
- ☐ Frequency range: 60/50 Hz
- ☐ Maximum current range: 2 A

### Environmental Requirements

The IntraSwitch must be installed in a clean, dry, dust-free area with adequate air circulation to maintain the following environmental limits:

- ☐ Temperature: 0° to 40° C
- ☐ Relative Humidity: 5% to 85% non-condensing

Avoid direct sunlight, heat sources, or areas with high levels of electromagnetic interference.

### Cooling and Airflow

Do not restrict air flow by covering or obstructing air vents on the sides of the chassis.

## Installation Overview

The table below describes the steps needed to install the IntraSwitch. The steps that are optional are labeled “optional” and the steps that are required are labeled “required.” The sections that follow explain each step in detail.

Table 2-1      Installation Overview

| Step                | Action                                                                                                                                      |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1</b> (required) | Open the box and check the contents.<br>See "Package Contents" on page 1-7 for a complete list of the items included with your IntraSwitch. |
| <b>2</b> (optional) | Install MII expansion module(s), if any.<br>See "Installing MII Modules" on page 2-5.                                                       |
| <b>3</b> (required) | Install the IntraSwitch in an equipment rack or prepare it for desktop placement.<br>See "Rack Mounting/Desktop Placement" on page 2-3.     |
| <b>4</b> (required) | Connect the power supply.<br>See "Connecting Power" on page 2-6.                                                                            |
| <b>5</b> (required) | Connect network devices to the IntraSwitch.<br>See "Connecting to the Network" on page 2-6.                                                 |
| <b>6</b> (optional) | Configure the IntraSwitch for management capabilities.<br>See "Configuring for Management" on page 2-8.                                     |

**Rack Mounting/  
Desktop  
Placement**

The IntraSwitch can be installed in a standard 19-inch equipment rack. It can also be placed on a stable horizontal surface with support capabilities of 12 pounds (5.4 kilograms).

**Equipment Rack  
Installation**

To install the unit in an equipment rack, use the following procedure. Refer to Figure 2-1 below.

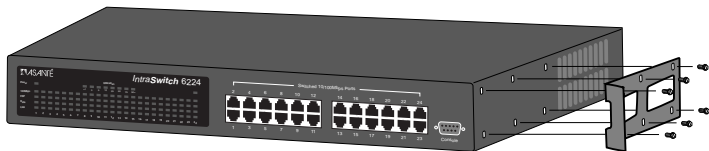


Figure 2-1      IntraSwitch Rack Installation

- ▲ **Important!** Disconnect all cables from the IntraSwitch before continuing.
- △ **Note:** You can install the IntraSwitch in an equipment rack before installing an expansion module.
- 1 Place the IntraSwitch on a flat, stable surface.
- 2 Locate a rack-mounting bracket (supplied) and place it over the mounting holes on one side of the unit.
- 3 Insert six screws (supplied) into the holes and tighten with a Phillips screwdriver.
- 4 Repeat the two previous steps for the unit's other side.
- 5 Place the unit in the equipment rack.
- 6 Secure the unit by screwing its mounting brackets to the equipment rack.
- ▲ **Important!** Make sure the unit is supported until all the mounting screws for each bracket are secured to the equipment rack. Failure to do so could cause the unit to fall, resulting in personal injury or damage to the unit, or both.

If you are installing an MII module at this time, proceed to “Installing MII Modules” on page 2-5.

If you are not installing an MII module at this time, proceed to “Connecting Power” on page 2-6.

### Free-Standing/ Desktop Installation

The IntraSwitch has four rubber feet on the bottom of the chassis that allow for free-standing installation of the unit.  
For free-standing/desktop placement:

- 1 Attach the four rubber pads (supplied) to the bottom of each corner of the IntraSwitch.
- 2 Place the unit on a flat surface with a minimum area of 17.1" x 13.5" (434.3 mm x 342.9 mm) and support capacity of 12 lbs (5 kg).  
Make sure there is enough ventilation space between the IntraSwitch and surrounding objects.

## Installing Asanté MII Modules (IntraSwitch 6216M Only)

The IntraSwitch 6216M has two optional Media Independent Interface (MII) expansion slots on the rear panel which provide for connection to various types of media access modules, including:

- ☐ Asanté 100Base-FX
- ☐ Asanté 10Base-FL

The MII expansion modules comply with IEEE 802.3 and 802.3u specifications and are sold separately. To install an MII expansion module:

- ▲ **Important!** The MII expansion modules are hot-swappable; you can install or remove a module without turning off power.
- 1 Align the bottom of the MII module with the rails on the inside of the MII 1 or MII 2 slot. Slide the module into the expansion slot until it stops, then push the module in gently until it seats with the connector.
  - 2 Observe the MII 1 and MII 2 LED indicators on the front panel. The LEDs will indicate proper insertion of the modules.
- △ **Note:** When MII 1 and/or MII 2 modules are installed, port 15 (MII 1) or port 16 (MII 2) will be disabled.

## Connecting Power

To connect power to the IntraSwitch:

- ▲ **Important!** Carefully review the power requirements on page 2-2 before connecting power to the IntraSwitch.
- 1 Plug one end of the supplied power cord into the power connector on the back of the unit.
- 2 Plug the other end into a grounded AC outlet.
- 3 The front panel LEDs blink and the Power LED illuminates.
- ▲ **Important!** If the power does not come on, refer to Appendix A, “Troubleshooting.”

The unit is ready for connection to the network.

## Connecting to the Network

The IntraSwitch unit may be connected to an Ethernet network, with the unit powered either on or off.

- 1 Connect network devices to the IntraSwitch, following the cable guidelines outlined below.
- 2 After the unit is connected to the network, it can be configured for management capabilities. See “Configuring for Management” on page 2-8.

## 10/100 Ports Cabling Procedures

The 16 fixed 10/100 ports allow for the connection of 10Base-T or 100Base-TX network devices. The ports are compatible with IEEE 802.3 and 802.3u standards.

- ▲ **Important!** The IntraSwitch must be located within 100 meters of its attached 10Base-T or 100Base-TX devices.

Table 2-2 10/100 Ports Cable Guidelines

| Connecting To              | Cable Required                                                                                              |
|----------------------------|-------------------------------------------------------------------------------------------------------------|
| Network Station            | Category 5 UTP (Unshielded Twisted-Pair) straight-through cable (100 meters maximum) with RJ-45 connectors. |
| Repeater/Hub               | Category 5, UTP cross-over cable (100 meters maximum) with RJ-45 connectors.                                |
| Repeater/Hub's Uplink port | Category 5, UTP straight-through cable (100 meters maximum) with RJ-45 connectors.                          |

MII Expansion Ports  
Cabling Procedures

The optional Asanté MII expansion slots on the rear panel allow for the connection of Asanté fibre optic 100Base-FX, or 10Base-FL media modules.

100Base-FX  
Module

Table 2-3 100Base-FX MII Module Cable Guidelines

| Connecting To       | Cable Required                                                                      |
|---------------------|-------------------------------------------------------------------------------------|
| All Network Devices | Dual 62.5/125 micron graded-index multimode fiber-optic cable with an SC connector. |

10Base-FL  
Module

Table 2-4 10Base-FL MII Module Cable Guidelines

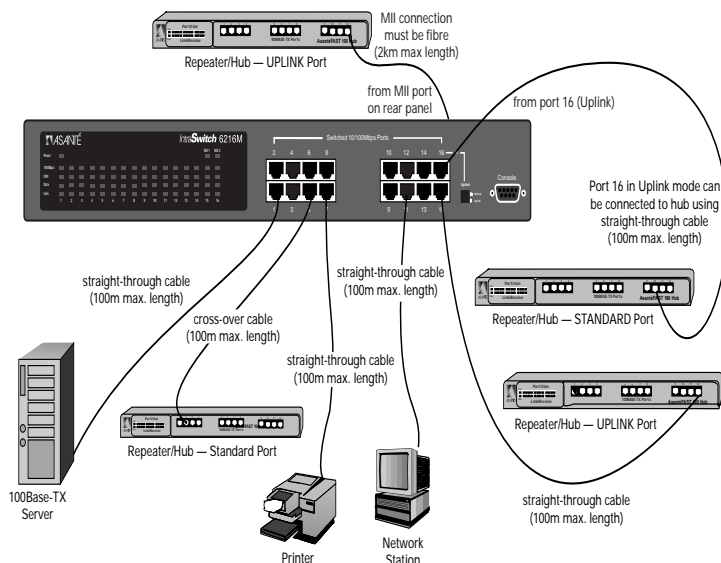
| Connecting To                          | Cable Required                                                                          |
|----------------------------------------|-----------------------------------------------------------------------------------------|
| ST Connector<br>All Network<br>Devices | Dual 62.5/125 micron graded-index multimode fiber-optic cable with a dual ST connector. |

Cabling Scenarios

The following diagram illustrates some cabling scenarios available with the IntraSwitch units. Note that the rear panel MII connections do not apply to the IntraSwitch 6224



## Installation



### Figure 2-2 IntraSwitch Cabling Scenarios

Δ **Note:** Pressing the Uplink switch toggles the usage of port 16 from normal to uplink or vice versa. This uplink feature is available only for regular RJ-45 port, and not for MII ports. When port 16 is used for uplink, the connection between port 16 to standard hub is straight-through cable.

## Configuring for Management

To use the IntraSwitch as a managed switch, it must be configured with an IP address. This can be accomplished in one of two ways:

- ☐ automatically using BootP (default)
- ☐ manually via the unit's Console port

## BootP Configuration

The IntraSwitch is shipped with BootP support. BootP allows the IntraSwitch to be automatically configured with an IP

address when it is connected to the network and is powered on, if your network contains a BootP server configured with available, valid IP addresses.

▲ **Important!** BootP configuration only works if the IntraSwitch does not have an IP address assigned to it.

**1** Make sure your network has a BootP server configured with a valid IP address entry for the IntraSwitch.

**2** When the IntraSwitch is connected to the network and is powered on, it automatically transmits a BootP request across the network (up to **10**times) until it receives a valid IP address from the BootP server.

**3** After an IP address is received, the IntraSwitch can be managed via in-band access. See Chapter 4 for more information.

To verify that a valid IP address was received, use a tool such as Ping<sup>1</sup> to try and access the IntraSwitch; if you can access the IntraSwitch, it is properly configured with an IP address.

See “Bootstrap Configuration” in Chapter 5 for more information on using BootP.

## Console Configuration

To manually configure the IntraSwitch with an IP address via its Console port, use a VT100 terminal or emulator (such as Hyper Terminal, ProComm, or ZTerm) running on a workstation or personal computer to connect to the switch’s Local Management Interface.

---

1. Ping is an application that can be used to test whether a remote device is properly connected to a network.

- 1 Using a **straight-through** 232 cable with a 9-pin male D-subminiature plug at one end, connect a terminal or workstation (PC or Macintosh) running a terminal emulator to the **Console** port on the front of the IntraSwitch.
- 2 Make sure both units are powered on.  
If using a PC with a terminal emulator, make sure it is configured with the following terminal settings:
  - ☐ Baud: 9600
  - ☐ Data Bits: 8
  - ☐ Parity: None
  - ☐ Stop Bits: 1
  - ☐ Flow Control: None
- 3 Once connected, the Local Management Main Menu appears on the terminal screen, as shown in Figure 2-3.

```
=====
IntraSwitch 6216M Local Management System Version 1.00U
Compiled Date: Jul 29 1998 15:55:34
Asante Technologies, Inc.
Copyright (c) 1998 Asante Technologies, Inc.
=====

Main Menu

<Cmd>    <Description>
g        General Information
c        Configuration
s        Statistics

Command> _
```

Figure 2-3 Local Management Interface Main Menu

- 4 Type **c** to open the Configuration Menu.  
The “Enter Password” prompt appears.
- 5 Type your password at the prompt.  
**▲ Important!** The default password is **Asante**. The password is case-sensitive.

For information on changing the password, see “Changing the Password” in Chapter 5.

- 6** Type **i** to open the Switch IP Configuration menu.
- 7** Type **i** to select the option “Set IP Address.”
- 8** Type the IP address to be assigned to the IntraSwitch at the prompt.
  - △ **Note:** Depending on your network configuration, you may also need to set subnet mask and default gateway (router) information. See “System IP Configuration” in Chapter 5 for instructions.
- 9** Press **Return**
- 10** Type **q** to return to the Configuration Menu.

The IntraSwitch is configured with an IP address and can now be managed via in-band access. See Chapter 4, “Setting Up For Management” for more information.



# 3

## LED Indicators

This chapter describes the IntraSwitch 6216M and 6224's front panel and explains how to interpret its port LEDs and other function indicators.

This chapter contains the following sections:

- ❑ LED Indicators
- ❑ Port LEDs
- ❑ Function Indicator Lights

# LED Indicators

## IntraSwitch 6216M and 6224 LED Indicators

### IntraSwitch 6216M and 6224, Common LEDs

The IntraSwitch 6216M and 6224 front panels contain LEDs which provide a visual indication for each 10/100TX port. The LEDs may also be used to assist with troubleshooting. See Figures 3-1 and 3-2. The four rows of port LEDs display:

- ☐ 100Mbps (100Mbps operation)
- ☐ FDP (full duplex operation)
- ☐ Data
- ☐ Link

Both IntraSwitch 6216M and 6224 contain an LED which indicates AC power on when lit.

### IntraSwitch 6216M LEDs

In addition to the LEDs in common with the IntraSwitch 6224 as described above, the IntraSwitch 6216M has MII 1 and MII 2 LEDs. These LEDs convey the presence of the MII expansion modules (if installed).

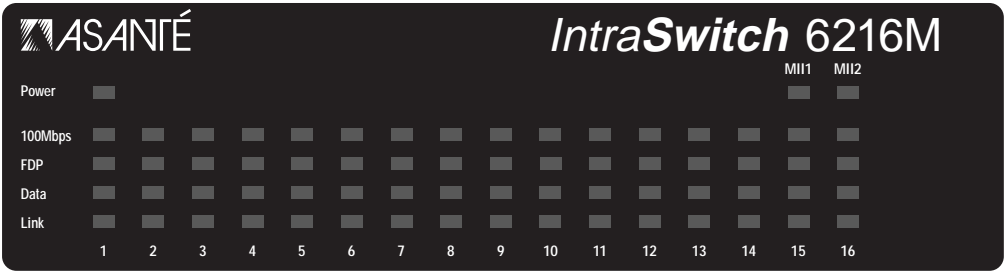


Figure 3-1 IntraSwitch 6216M LED Panel

## IntraSwitch 6224 LEDs

In addition to the LEDs in common with the IntraSwitch 6216M as described above, the IntraSwitch 6224 has a row of eight LEDs which display the percentage of Switch utilization.

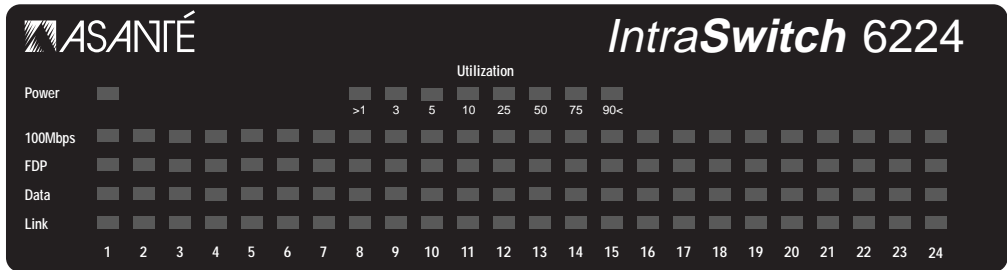


Figure 3-2 IntraSwitch 6224 LED Panel

## IntraSwitch 6216M and 6224 Port LEDs

The IntraSwitch 6216M and 6224 have four rows of LEDs. The following table describes their color and function.

Table 3-1 IntraSwitch 6216M and 6224 Port LED Descriptions

| LED     | Color | Meaning                                                                                                                   |
|---------|-------|---------------------------------------------------------------------------------------------------------------------------|
| 100Mbps | green | The port speed is 100Mbps.                                                                                                |
| FDP     | amber | The port is in full duplex mode.<br><b>Note:</b> Full duplex means that a port can transmit and receive at the same time. |
| Data    | green | Traffic activity is occurring on the port, transmit [TX] or receive [RX].                                                 |
| Link    | green | The port is connected to a powered-on node or other network device.                                                       |

△ **Note:** For information on using the LEDs to troubleshoot problems with your network, see Appendix A, “Troubleshooting.”



IntraSwitch  
6216M Function  
LEDs

The IntraSwitch 6216M has three function indicator lights, which comprise one Power and two MII LED indicators. The following table describes their color and function.

Table 3-2      IntraSwitch 6216M Indicator Light Description

| LED          | Color | Meaning                                                                                                                                                                                      |
|--------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power        | green | The IntraSwitch is receiving AC electrical power.                                                                                                                                            |
| MII 1, MII 2 | green | Indicates the presence of an Asanté MII Module in MII slot 1 (port 15) or MII slot two (port 16). No connection or link is required for the MII LED to be lit, just the module installation. |

IntraSwitch  
6224 Function  
LEDs

The IntraSwitch 6224 has one Power indicator and a row of eight Utilization indicators. The following table describes their color and function.

Table 3-3      IntraSwitch 6224 Indicator Light Descriptions

| LED                                               | Color | Meaning                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power                                             | green | The IntraSwitch is receiving AC electrical power.                                                                                                                                                                                                                                             |
| Utilization<br>1, 3, 5, 10,<br>25, 50, 75,<br>90% | green | Row of eight LEDs which Indicates the percentage of utilization of the IntraSwitch ports. The LEDs will light if backplane traffic is less than or equal to the indicated value. Total backplane capacity is four Gbps. If utilization indicates 25% or greater, the LED color will be amber. |

# 4

## Setting Up For Management

This chapter describes the IntraSwitch 6216M and 6224's management options and explains how to connect to the unit using those options.

This chapter contains the following sections:

- ❑ Overview
  - ❑ Management Scenarios
- ❑ Out-of-Band Management
- ❑ In-Band Management

# IntraSwitch Management

---

**Overview**     The IntraSwitch 6216M and 6224 and any installed Asanté MII Modules can be managed using any of the following methods:

Table 4-1     Management Options

| Method                                    | Type                   | Description                                                                            |
|-------------------------------------------|------------------------|----------------------------------------------------------------------------------------|
| Console                                   | out-of-band management | local connection to the IntraSwitch via the Console port                               |
| Telnet<br>( <b>four</b> sessions maximum) | in-band management     | remote connection over the network to the IntraSwitch via Telnet session               |
| HTTP Server                               | in-band management     | remote connection to the IntraSwitch via a Web browser                                 |
| SNMP-Based Network Management Software    | in-band management     | remote connection to the IntraSwitch via any SNMP-based network management application |

**This chapter describes how to connect to the IntraSwitch using either out-of-band or in-band management, as illustrated in Figure 4-1.**

**For information on each management method, see the following:**

- ❑ **Console or Telnet management** — see Chapter 5, **Console Management**.
- ❑ **HTTP Server management** — see **Web Browser Management**, Chapter 8
- ❑ **SNMP-based network management software** — see **SNMP-Based Management Software** on page 4-6.

## Management Scenarios

The following diagram illustrates the management options available with the IntraSwitch 6216M and 6224.

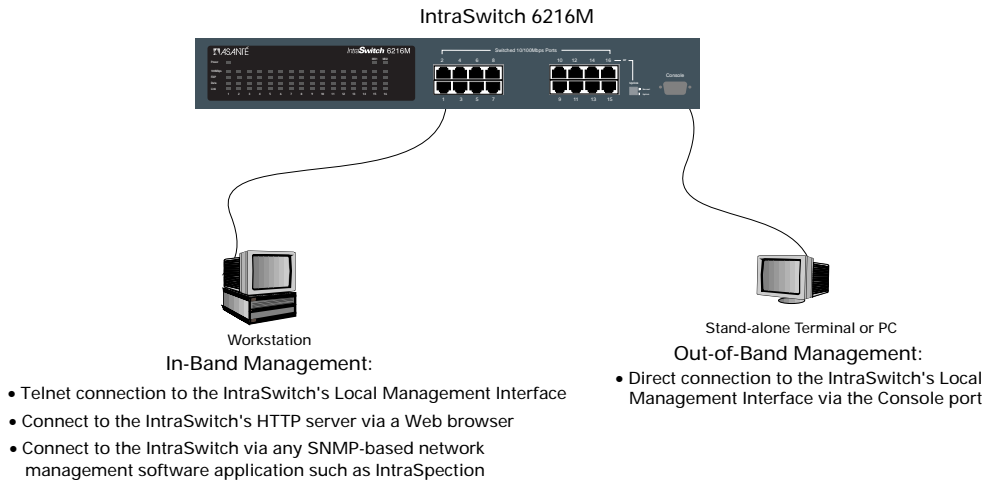


Figure 4-1 IntraSwitch 6216M and 6224 Management Options

## Out-of-Band Management

Out-of-band network management allows you to configure, manage, and monitor the IntraSwitch and any installed expansion modules. You can perform these functions via the following method:

- ❑ By attaching a terminal (or a terminal emulator) to the IntraSwitch's Console port and using the menu-driven **Local Management Interface**

Out-of-band network management is guaranteed even when the in-band Ethernet network is down.

To access the IntraSwitch Local Management Interface using out-of-band management:

- 1 Connect a stand-alone terminal or a PC running a terminal emulator directly to the IntraSwitch's Console port using a **straight-through** 232 serial cable with a male connector.

- 2
- Make sure both units are powered on.  
If using a PC or Mac with a terminal emulator to connect to the Console port, make sure it is configured with the following terminal settings:
- ☐ Baud rate: 9600

☐ Data Bits: 8

☐ Parity: None

☐ Stop Bits: 1

☐ Flow Control: None
- 3
- Once connected, the Local Management Interface Main Menu appears on the screen, as shown in Figure 4-2.



Figure 4-2 Local Management Interface Main Menu

See Chapter 5, “Console Management,” for information on using the Local Management Interface to manage the IntraSwitch and any installed expansion modules.

▲

**Important!** A password is needed to access the Configuration Menu. The default password is **Asante**. The password is case-sensitive.

## In-Band Management

In-band network management allows you to manage, control, and monitor the IntraSwitch and any installed expansion modules over the Ethernet network.

You can perform these functions by accessing the IntraSwitch via any of the following methods:

- ☐ By connecting with a Telnet program and using the **Local Management Interface**
- ☐ By connecting with any common World Wide Web browser, and using the Web Management Interface.
- ☐ By connecting with any SNMP-based network management application and using its interface.

To manage the IntraSwitch via in-band management:

- 1** Make sure the network to which the IntraSwitch is connected is functioning.
- 2** Make sure the IntraSwitch is configured with valid IP information.  
See “Configuring for Management” on page 2-8.
- 3** Connect to the IntraSwitch via Telnet, with a Web browser, or with any SNMP-based network management application.

### Telnet

See Chapter 5, Console Management, for information on managing the IntraSwitch.

- △ **Note:** Almost all management screens using a Telnet are identical to those of the out-of-band Console interface.

### Web Browser

Refer to Chapter 8, Web Browser Management Manual, for information on managing the IntraSwitch with a Web browser.

## Setting Up For Management

### SNMP-Based Management Software

Refer to your SNMP Software Manual for information on managing the IntraSwitch with SNMP-based management software.

The Asanté private MIB for the IntraSwitch is available from the Asanté ftp site, *ftp.asante.com*.

# 5

## Console Management

This chapter describes how to manage the IntraSwitch 6216M and 6224 using the out-of-band Console or in-band Telnet interface.

This chapter contains the following sections:

- ❑ Overview
- ❑ Configuration Tasks
- ❑ Management Tasks
- ❑ Local Management Interface
  - ❑ General Information Menu
  - ❑ Configuration Menu
    - ❑ Logging into the Configuration Menu
  - ❑ Statistics Menu



# Console Management

---

**Overview**      The IntraSwitch 6216M and 6224's Local Management Interface is a menu-driven application which provides management and configuration support for the unit and each of its ports.

The Local Management Interface can be accessed via two methods:

- ❑ Out-of-band connection to the Console port.
- ❑ In-band connection via Telnet (**four sessions maximum**).

This section describes each menu within the Local Management Interface as well as how to perform the configuration/management tasks outlined in Tables 5-1 and 5-2.

Table 5-1      Configuration Tasks

| Configuration Task                  | Page      |
|-------------------------------------|-----------|
| Logging into the Configuration Menu | page 5-6  |
| System Administration Information   | page 5-10 |
| Changing System IP Information      | page 5-12 |
| Changing the Boot Bank Number       | page 5-15 |
| Executing Software Locally          | page 5-15 |
| Loading Software Remotely           | page 5-16 |
| Changing Community Strings          | page 5-18 |
| Configuring Duplex Mode             | page 5-24 |
| Configuring Auto-Negotiation        | page 5-25 |

# Management Tasks

Table 5-2 Management Tasks

| Management Task                                     | Page      |
|-----------------------------------------------------|-----------|
| Enabling Traps                                      | page 5-19 |
| Adding a Trap Receiver                              | page 5-19 |
| Deleting a Trap Receiver                            | page 5-20 |
| Enabling or Disabling a Port                        | page 5-23 |
| Performing a Software Upgrade at Runtime            | page 5-35 |
| Displaying the MAC Address Table                    | page 5-29 |
| Searching the MAC Address Table                     | page 5-30 |
| Setting the MAC Address Age-Out Time                | page 5-31 |
| Enabling the Duplicated-IP Trap                     | page 5-32 |
| Viewing the Trap Log                                | page 5-32 |
| Resetting the IntraSwitch                           | page 5-41 |
| Scheduling a Reset                                  | page 5-41 |
| Viewing the System Log                              | page 5-42 |
| Clearing the System Log                             | page 5-43 |
| Setting the Console and Telnet Idle Time-out Period | page 5-44 |
| Changing the Password                               | page 5-46 |

△ **Note:** For information on monitoring statistics, viewing the IntraSwitch's current operating and system information, see Chapter 6, "Status Monitoring, Traffic, and Statistics."

# Local Management Interface

After you connect to the Local Management Interface using either out-of-band Console or in-band Telnet connection as described in Chapter 4, the Main Menu appears as shown in Figure 5-1.

## Main Menu

```
=====
IntraSwitch 6216M Local Management System Version 1.00U
Compiled Date: Jul 29 1998 15:55:34
Asante Technologies, Inc.
Copyright (c) 1998 Asante Technologies, Inc.
=====

Main Menu

<Cmd>      <Description>
g          General Information
c          Configuration
s          Statistics

Command> _
```

Figure 5-1 Local Management Interface Main Menu

From the Main Menu, you can access three submenus:

- ❑ General Information — page 5-5
- ❑ Configuration — page 5-6
- ❑ Statistics — page 5-50

If you are using Telnet, a fourth option will be available — Close Connection. This option closes your remote connection to the IntraSwitch’s Local Management Interface.

## Accessing a Submenu

To access a submenu, type the command letter of the corresponding option (e.g., type **g** for General Information).

## Exiting a Submenu

To exit a submenu, type **q**. To exit a command line (e.g., the “Set Password” option in the Configuration Menu), press **ctrl-c**.

## General Information Menu

The General Information Menu displays the IntraSwitch's current operating information; such as its name, IP address, and boot information.

△ **Note:** The information displayed on this screen is read-only.

### Accessing the General Information Menu

- ❑ Type **g** from the Local Management Interface Main Menu. A screen similar to Figure 5-2 appears:

```
IntraSwitch 6216M General Information Menu
System up for: 002days, 22hrs, 36mins, 26secs
Software Version
  Running Image Version/Date: 1.00U/Jul 29 1998 15:55:34
  Bank 1 Image Version/Date: 1.00T/Jul 27 1998 14:23:09
  Bank 2 Image Version/Date: 1.00U/Jul 29 1998 15:55:34 <Running>
Administration Information
  Switch Name: 6216 Test switch
  Switch Location: Breen's Cube
  Switch Contact: <none>
System Information
  DRAM Size: 4MB          Console Baud Rate : 9600 bps
  Flash Size: 1.5MB
  EEPROM Size: 32KB
Switch MAC Address, IP Address, Subnet Mask and Router
  MAC Address: 00:00:94:AA:02:18
  IP Address: 192.203.52.62
  Subnet Mask: 255.255.255.0
  Router: 192.203.52.1
Bootstrap Configuration
  Boot Load Mode: LOCAL
  TFTP Server: 192.203.52.211
  Boot File Name: ent100u.ima
Press any key to continue...
```

Figure 5-2 General Information Menu

▲ **Important!** For a description of each parameter on the General Information Menu, see “General Information Menu Parameters” on page 6-3.

To exit the General Information Menu, press any key on your keyboard.

# Configuration Menu

The Configuration Menu allows you to manage and configure the IntraSwitch and each of its ports.

## Logging into the Configuration Menu

- 1 Type **c** from the Local Management Interface Main Menu.
- 2 Enter your password at the “Enter Password” prompt, then press **Return**

▲ **Important:** The default password when you first access the Configuration Menu is **Asante**. The password is case-sensitive; enter it exactly as shown.

For information on changing passwords, see “Changing the Password” on page 5-46.

The Configuration Menu appears, as shown in Figure 5-3.

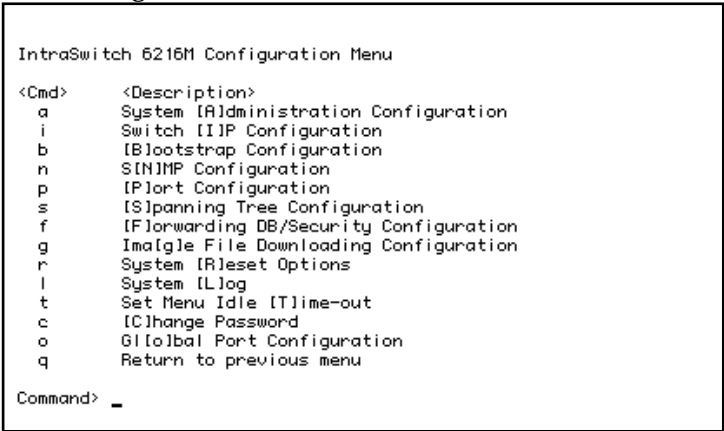


Figure 5-3 Configuration Menu

- 3 From this menu you can access configuration sub-menus by typing the command letter of the corresponding menu option (e.g., type **a** for the System Administration Configuration Menu).

### Configuration Menu Options

**Table 5-3** provides an overview of each Configuration Menu item.

Table 5-3 Configuration Menu Options

| Menu Item                                   | Description                                                                                                                                                                                                                                             |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>System Administration Configuration</b>  | Displays and allows you to change the name, location, and contact information for the IntraSwitch.<br>See "System Administration Configuration" on page 5-9.                                                                                            |
| <b>Switch IP Configuration</b>              | Displays and allows you to change the information needed to access the IntraSwitch over the network (in-band management).<br>See "System IP Configuration" on page 5-10.                                                                                |
| <b>Bootstrap Configuration</b>              | Allows you to change the boot method the IntraSwitch uses for loading its software. Also allows you to change the parameters used for downloading a new version of runtime software for the IntraSwitch.<br>See "Bootstrap Configuration" on page 5-12. |
| <b>SNMP Configuration</b>                   | Displays and allows you to change the IntraSwitch's SNMP (Simple Network Management Protocol) parameters; such as, read/write community strings, trap authentication, and trap receivers.<br>See "SNMP Configuration" on page 5-17.                     |
| <b>Port Configuration</b>                   | Allows you to manually configure each of the IntraSwitch's ports for speed, connection, link mode, and auto-negotiation. Also displays an overall status of the IntraSwitch system.<br>See "Port Configuration" on page 5-20.                           |
| <b>Spanning Tree Configuration</b>          | Displays and allows you to change the IntraSwitch's Spanning Tree parameters.<br>See "Spanning Tree Configuration" on page 5-27.                                                                                                                        |
| <b>Forwarding DB/Security Configuration</b> | Allows you to view and search for addresses in the IntraSwitch's MAC Forwarding Table. Also allows you to set a trap for duplicate IP addresses and view the trap log.<br>See "Forwarding Database/Security Configuration" on page 5-27.                |

| Menu Item                                 | Description                                                                                                                                                                                               |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TFTP Image File Downloading Configuration | Allows you to upgrade the IntraSwitch's software.<br>See "TFTP Image File Downloading Configuration" on page 5-33.                                                                                        |
| System Reset Options                      | Allows you to reset the IntraSwitch by performing a "warm" reboot. Also allows you to set the IntraSwitch for an automatic reset (up to 24 hours) in advance.<br>See "System Reset Options" on page 5-39. |
| System Log                                | Allows you to view the IntraSwitch's System Log.<br>See "System Log" on page 5-42.                                                                                                                        |
| Set Idle Time-out                         | Allows you to set the idle time-out period when using Console and Telnet to access the IntraSwitch.<br>See "Idle Time-out" on page 5-44.                                                                  |
| Change Password                           | Allows you to change the password needed to access the Configuration Menu.<br>See "Changing the Password" on page 5-46.                                                                                   |
| Global Port Configuration                 | Allows you to change the configuration of all ports simultaneously.                                                                                                                                       |
| Return to Previous Menu                   | Exits the Configuration Menu and returns to the Local Management Interface Main Menu.                                                                                                                     |

## System Administration Configuration

This menu displays and allows you to change the IntraSwitch’s name, location, and contact information.

To access the System Administration Configuration Menu, type **a** in the Configuration Menu. A screen similar to Figure 5-4 appears.

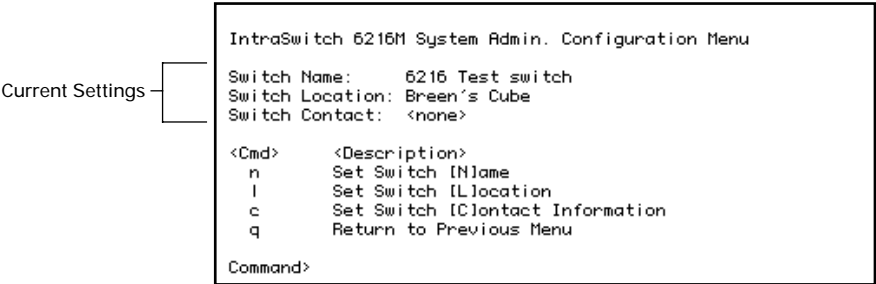


Figure 5-4 System Administration Configuration Menu

### Current Settings

Table 5-4 explains each setting on the System Administration Configuration Menu.

For information on using the menu, see:

- ❑ “Changing System Administration Information” — page 5-10.

Table 5-4 System Administration Configuration Menu Settings

| Menu Item       | Description                                                                                               |
|-----------------|-----------------------------------------------------------------------------------------------------------|
| Switch Name     | The name of the IntraSwitch (up to 64 characters, including spaces).                                      |
| Switch Location | The location where the IntraSwitch is physically located (up to 64 characters, including spaces).         |
| Switch Contact  | The name of the person or entity responsible for the IntraSwitch (up to 64 characters, including spaces). |



### Changing System Administration Information

To change the IntraSwitch's name, location, or contact information:

- 1** Open the System Administration Configuration Menu by typing **a** in the Configuration Menu.
- 2** Type the command letter of the item to be changed in the System Administration Configuration Menu.
- 3** Type the information at the prompt.  
See Table 5-4 for a description of each parameter.  
  
△ **Note:** Each parameter is limited to 64 characters, including spaces.  
  
To cancel a selected option, press **ctrl-c** at the command prompt.
- 4** Press **Return**  
The IntraSwitch's system administration information is changed.  
To quit and return to the Configuration Menu, type **q**

### System IP Configuration

This menu displays and allows you to change the information needed to access the IntraSwitch over the network via in-band management.

To access the System IP Configuration Menu, type **i** in the Configuration Menu. A screen similar to Figure 5-5 appears.

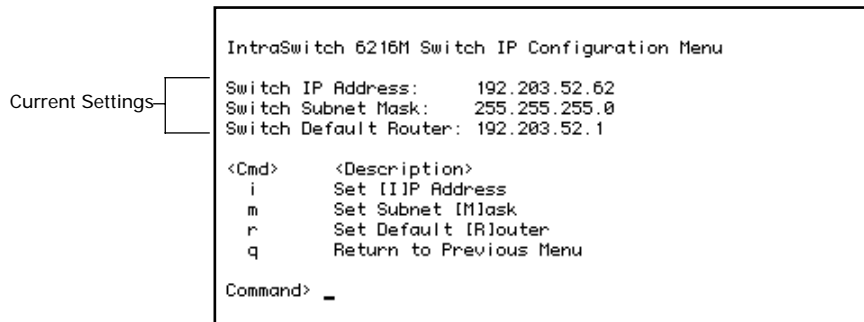


Figure 5-5 System IP Configuration Menu

▲ **Important:** By default, each address is set to 0.0.0.0.

### Current Settings

Table 5-5 explains each setting on the System IP Configuration Menu.

For information on using the menu, see “Changing System IP Information” on page 5-12.

Table 5-5 System IP Configuration Menu Settings

| Setting               | Description                                       |
|-----------------------|---------------------------------------------------|
| Switch IP Address     | The IntraSwitch's IP (Internet Protocol) address. |
| Switch Subnet Mask    | The IntraSwitch's subnet mask.                    |
| Switch Default Router | The address of the IntraSwitch's default router.  |

## Changing System IP Information

To change the IntraSwitch's IP address, subnet mask, or default router information:

- 1** Open the System IP Configuration Menu by typing **i** in the Configuration Menu.
- 2** Type the command letter of the option you want to change.
- 3** Type the new address at the prompt.  
See Table 5-5 for a description of each address.

▲ **Important!** Follow the format: *number. number. number. number.*

To cancel, press **ctrl-c** at the command prompt.

- 4** Press **Return**  
The IntraSwitch's IP information is changed.  
To quit and return to the Configuration Menu, type **q**

## Bootstrap Configuration

This menu displays (and allows you to change) the bootstrap parameters used for loading the IntraSwitch's software at startup, and for downloading a new version of software when one is issued. To access the Bootstrap Configuration Menu, type **b** in the Configuration Menu. A screen similar to Figure 5-6 appears.

Current Settings

```

IntraSwitch 6216M Bootstrap Configuration Menu

Running Image Version/Date: 1.00U/Jul 29 1998 15:55:34
Bank 1 Image Version/Date: 1.00T/Jul 27 1998 14:23:09
Bank 2 Image Version/Date: 1.00U/Jul 29 1998 15:55:34 <Running>

Boot Server IP: 192.203.52.211
Boot File Name: ent100u.ima
Boot Mode:      TFTP only
Load Mode:      LOCAL
Boot Bank:      2

<Cmd>    <Description>
b        Set Boot Mode to [B]OOTP-TFTP
t        Set Boot Mode to [T]FTP only
l        Set Load Mode to [L]OCAL
r        Set Load Mode to [R]EMOTE
s        Set Boot [S]erver IP Address
f        Set Boot [F]ile Name
a        Toggle Boot B[an]k
q        Return to Previous Menu

Command> _

```

Figure 5-6 BootStrap Configuration Menu

**▲ Important!** The IntraSwitch's default Load Mode setting is **Local**

When the IntraSwitch is powered on, it loads its software via one of two methods: locally (via its internal flash memory which is the default setting) or remotely over the network.

## Image Banks

The IntraSwitch has two banks to store its run time software. The banks are referred to as bank 1 and bank 2.

Either of these banks may be the Boot Bank, which is the bank where the runtime code will be loaded the next time the IntraSwitch is booted.

When downloading new runtime image codes, the user may specify either of the two banks as the Destination Bank in which the new code will be loaded.

Current Settings

Table 5-6 explains each setting on the Bootstrap Configuration Menu.

For information on using the menu, see:

- ❑ “Loading Software Locally” — page 5-15
- ❑ “Loading Software Remotely” — page 5-16
- ▲ **Important!** For information on performing a software upgrade, see “Performing a Software Upgrade” on page 5-35.

Table 5-6      Bootstrap Configuration Menu Settings

| Setting                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Running Image Version/Date | The version and compilation date of runtime code that is currently running on the IntraSwitch.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Bank 1 Image Version/Date  | The version and compilation date of runtime code that is stored in Bank 1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Bank 2 Image Version/Date  | The version and compilation date of runtime code that is stored in Bank 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Boot Server IP             | The IP address of the boot server providing BootP/TFTP capabilities on your network.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Boot File Name             | The name of the IntraSwitch's software file and its network path.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Boot Mode                  | <p>The method for requesting the software image file from the network.</p> <p>BootP-TFTP — Sets the IntraSwitch to request an IP address from a BootP server AND to download the software's image file through TFTP (Trivial File Transfer Protocol).</p> <p>▲ <b>Important!</b> To use this option, the IntraSwitch's IP address must be set to 0.0.0.0 and the Load Mode must be set to Remote.</p> <p>TFTP ONLY — Sets the IntraSwitch to only download the software image file through TFTP.</p> <p>▲ <b>Important!</b> To use this option, the IntraSwitch must already have an assigned IP address and the Load Mode must be set to Remote.</p> |

| Setting          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Load Mode</b> | <p>The current method for loading the IntraSwitch's software.</p> <p>Local — Executes the software image file from the IntraSwitch's internal flash memory (default setting; the IntraSwitch automatically reverts to this setting after downloading a new software file).</p> <p>Remote — Loads the software image file from a server on the network.</p> <p>▲ <b>Important!</b> To use the remote option, you must select BootP-TFTP or TFTP as the Boot Mode.</p> |
| <b>Boot Bank</b> | <p>The number of the image bank being used to load the IntraSwitch's software.</p> <p><i>Note:</i> The image bank is where the runtime code is stored; the IntraSwitch has two image banks: Boot Bank and Destination Bank.</p>                                                                                                                                                                                                                                      |

### Selecting the Boot Bank Number

To select the Boot Bank that the IntraSwitch will boot from the next time it boots up:

- 1** Open the Bootstrap Configuration Menu by typing **b** in the Configuration Menu.
- 2** Type **a** in the Bootstrap Configuration Menu to toggle the Boot Bank from **1** to **2** (or vice versa).

### Loading Software Locally

The IntraSwitch will always boot locally unless the user sets it to boot load remotely. It would then download the new image code and reset to load locally.

- 1** Make sure the IntraSwitch is configured with a valid IP address.
- 2** Open the Bootstrap Configuration Menu by typing **b** in the Configuration Menu.
- 3** Type **l** in the Bootstrap Configuration Menu to set the Load Mode to **Local**

The IntraSwitch is set to load software locally from its flash memory. This occurs whenever the unit is powered on or reset.

### Loading Software Remotely

To set the IntraSwitch to (download its software) over the network from a remote server:

- 1** Open the Bootstrap Configuration Menu by typing **b** in the Configuration Menu.
- 2** Type **s** in the Bootstrap Configuration Menu, select option **Set Boot Server IP Address**
- 3** Type the IP address at the prompt of the remote boot server which contains the unit's software image file, then press **Return**
- 4** Type **r** to set the Load Mode to **Remote**
- 5** Type **f** to select the option **Set File Name**
- 6** Type the software's file name and network path at the prompt.
- 7** Press **Return**  
The unit is set to download its software remotely from the network. This will occur the next time the unit is powered on or reset.

## SNMP Configuration

This menu displays the unit’s SNMP (Simple Network Management Protocol) Configuration Menu.

This menu allows you to configure the unit’s read and write community strings. It also allows you to specify which of your network management stations will receive traps from the IntraSwitch.

To access this, type **n** in the Configuration Menu. See Figure 5-7

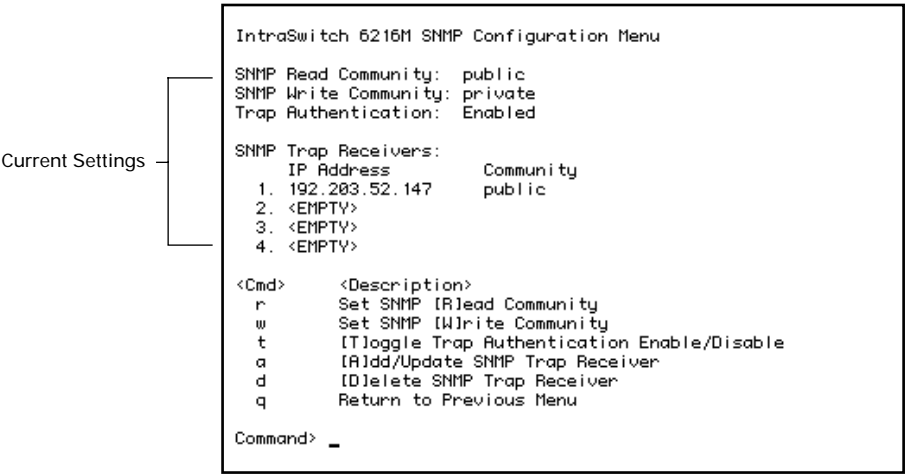


Figure 5-7 SNMP Configuration Menu

### Current Settings

Table 5-7 explains each setting on the SNMP Configuration Menu.

For information on using the menu, see:

- ☐ “Changing Community Strings” — page 5-18
- ☐ “Enabling Traps” — page 5-19
- ☐ “Adding a Trap Receiver” — page 5-19
- ☐ “Deleting a Trap Receiver” — page 5-20



Table 5-7      SNMP Configuration Menu Settings

| Setting              | Description                                                                                                                                                                                                                                                                 |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SNMP Read Community  | The IntraSwitch's SNMP read community string.<br><i>Note:</i> The read community string is a single word that defines access rights for reading SNMP data objects. The default setting is <b>public</b> .                                                                   |
| SNMP Write Community | The IntraSwitch's SNMP write community string.<br><i>Note:</i> The write community string is a single word that defines access rights for writing SNMP data objects. The default setting is <b>private</b> .                                                                |
| Trap Authentication  | The status of the SNMP agent to generate authentication traps.<br>The default setting is disabled.                                                                                                                                                                          |
| SNMP Trap Receivers  | The IP addresses of the network management stations that can receive traps from the IntraSwitch.<br>Normally, these addresses are the same as your network management software systems' IP address(es).<br><b>▲ Important!</b> A maximum of four trap receivers is allowed. |

Changing Community Strings

To change the IntraSwitch's community strings:

- 1    Open the SNMP Configuration Menu by typing **n** in the Configuration Menu.
- 2    Type **r** to change the read community string or **w** to change the write community string.
- 3    Type a new community string at the prompt. See Table 5-7 for a description of read and write community strings.  
To cancel a selected option, press **ctrl-c** at the command prompt.
- 4    Press **Return**  
To quit and return to the Configuration Menu, type **q**

## Enabling Authentication Traps

The IntraSwitch can be set to generate authentication traps. Authentication traps are messages sent across the network to an SNMP network management station. They alert you when someone without access rights attempts to change the device's MIB information.

To set the IntraSwitch to generate traps:

- 1** Open the SNMP Configuration Menu by typing **n** in the Configuration Menu.
- 2** Type **t** to toggle trap authentication from disabled to **enabled**  
To cancel, press **ctrl-c** at the command prompt.  
To quit and return to the Configuration Menu, type **q**

## Adding a Trap Receiver

Trap receivers are the network management stations designated to receive traps from the IntraSwitch when they occur.

▲ **Important!** The maximum number of trap receivers that can be set is **four**

To add a trap receiver entry:

- 1** Open the SNMP Configuration Menu by typing **n** in the Configuration Menu.
- 2** Type **a** to **Add a Trap Receiver**
- 3** Type the IP address of the network management station you want to receive traps, then press **Return**  
To cancel, press **ctrl-c**
- 4** Type the trap receiver's community string at the prompt, then press **Return**

The trap receiver entry is added.

To return to the Configuration Menu, type **q**

### Deleting a Trap Receiver

To delete a trap receiver entry:

- 1** Open the SNMP Configuration Menu by typing **n** in the Configuration Menu.
- 2** Type **d** to **Delete a Trap Receiver**
- 3** Type the number of the receiving network management station entry to be deleted, then press **Return**

The trap receiver entry is deleted.

To return to the Configuration Menu, type **q**

## Port Configuration

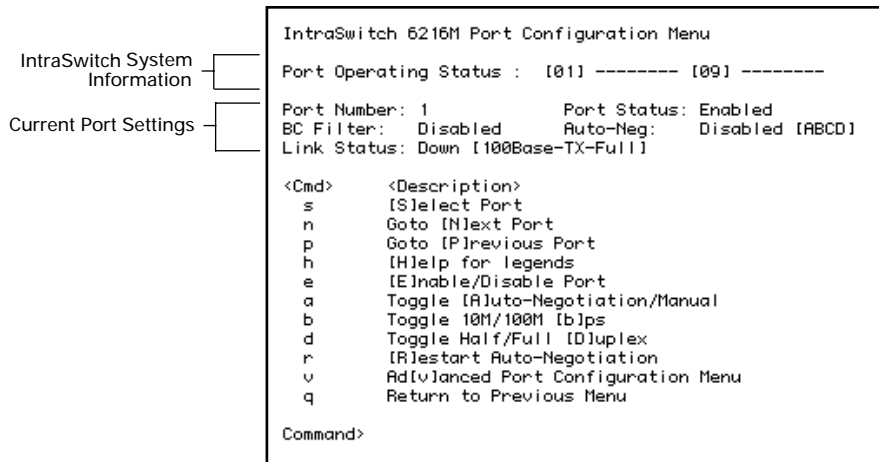
This menu allows you to manually configure each of the IntraSwitch's ports and any installed MII expansion modules for speed, connection, link mode, and auto-negotiation.

It also provides an overview of the entire IntraSwitch system's port operating status. The Advanced Port Configuration option "v" allows you to configure ports BC filtering and its auto-negotiation advertisement.

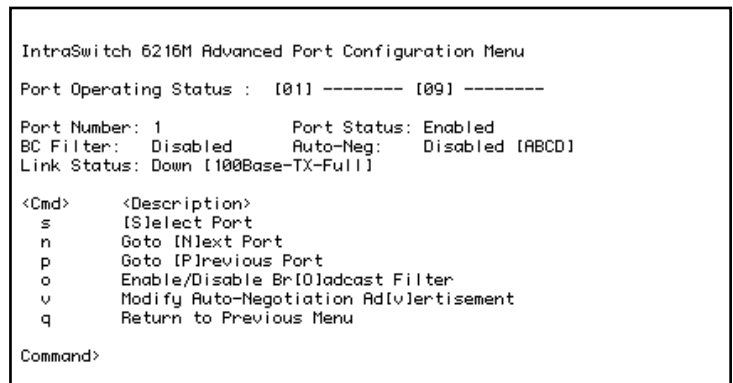
The default parameters for each of the IntraSwitch's ports are:

- ☐ auto-negotiation — enabled; auto-negotiates to 10 or 100Mbps half or full duplex

To access the Port Configuration Menu, type **p** in the Configuration Menu. A screen similar to Figure 5-9 appears.



**Figure 5-8 Port Configuration Menu**



**Figure 5-9 Advanced Port Configuration Menu**

IntraSwitch System Information

Table 5-8 on page 5-22 explains the system information.

For directions on using this menu to view IntraSwitch system information, see “Viewing IntraSwitch System Information” on page 6-4.

Current Port Settings

The current port for which statistics are displayed is shown at the top of the screen next to “**Port Number**”:

Table 5-8 explains each setting on the Port Configuration Menu.

For information on using the Port Configuration Menu, see:

- ❑ “Enabling/Disabling a Port” — page 5-23
- ❑ “Configuring Duplex Mode” — page 5-24
- ❑ “Configuring Auto Negotiation” — page 5-25

Table 5-8 Port Management Menu Settings

| Setting               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Port Operating Status | The status of the IntraSwitch. This field displays symbols for each of the unit's 16 ports.<br>List of Port Symbols:<br>X — no port exists.<br>- (negative symbol) — a port exists but is not linked.<br>! — the port is disabled.<br>B — the port is in a blocking state.<br>S — the port is in a listening state.<br>R — the port is in a learning state.<br>+ — the port is in a forwarding state.<br>▲ <b>Important!</b> Type h “Help for Legends” in the Port Management Menu for a list of the port symbols. |
| Port Number           | The port number for which parameters are shown.                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| BC Filter             | The port's capability to forward broadcast packets.<br>Enabled — broadcast packets will be discarded.<br>Disabled — broadcast packets will be processed normally.                                                                                                                                                                                                                                                                                                                                                  |

| Setting     | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Port Status | <p>The administrative status of the port's connection.</p> <p>Enabled — port is enabled and can receive and forward packets.</p> <p>Disabled — port is disabled and cannot receive packets.</p> <p><i>Note:</i> If the port is disabled, it cannot not receive any packets, even if the port's Link Status is UP.</p> <p>▲ <b>Important!</b> There is no indication on the front panel that a port is disabled. The ports can only be seen in one of the management modes. .</p>                                                                                                                                                                             |
| Auto-Neg    | <p>The status of the port's auto-negotiation capability. This field also shows the port's speed and link mode capability by using a combination of four characters: ABCD.</p> <p>ABCD — capable of all combinations of speed and link mode (i.e., 100Base-TX full and half duplex, 10Base-T full and half duplex, and 10Base-T half duplex). This is the default setting.</p> <p>A — 100Base-TX full duplex</p> <p>B — 100Base-TX half duplex</p> <p>C — 10Base-T full duplex</p> <p>D — 10Base-T half-duplex</p> <p>▲ <b>Important!</b> Type h "Help for Legends" in the Port Configuration Menu for a complete list of all the combinations available.</p> |
| Link Status | <p>The status of a network device's connection to the port and the speed and mode it is using.</p> <p>Up — a network device is powered on and is properly connected to the port.</p> <p>Down — no network device connected to the port.</p>                                                                                                                                                                                                                                                                                                                                                                                                                  |

## Enabling or Disabling a Port

The enabling or disabling of a port is a manual operation that can be used to isolate network devices possibly causing problems on the network or to prevent unauthorized use of a port or station.

To enable or disable a port:

- 1 Open the Port Management Menu by typing **p** in the Configuration Menu.

- 2 Select the port to be enabled or disabled by typing **s**, entering the port's number, and pressing **Return**
- 3 Type **e** to toggle the port's connection to **enabled** or **disabled** as desired.  
The port's status is changed. The new status is displayed at the top of the screen next to **Port Status**:

### Configuring Duplex Mode

Full duplex mode allows a port to transmit and receive at the same time.

- ▲ **Important!** To use full duplex mode, the device to which the port is connected must support and be configured for full duplex mode.
- △ **Note:** To configure a port for duplex mode, first disable auto-negotiation, as described in the next section.

- 1 Open the Port Management Menu by typing **p** on the Configuration Menu.
- 2 Select the port to be configured for full duplex mode by typing **s**, entering the port's number, and pressing **Return**
- 3 Type **d** to toggle the port's duplex mode half to full, or full to half.  
The port's mode is changed and is displayed at the top of the screen next to **Link Status**

## Configuring Auto-negotiation

Auto-negotiation is a feature of the Fast Ethernet standard that enables two devices on a common segment to communicate their capabilities. This feature allows the devices to determine their highest common speed and best communication parameters.

### Options Negotiated

The options negotiated during auto-negotiation are:

- ☐ 100Base-TX Fast Ethernet or 10Base-T Ethernet)
- ☐ Duplex mode (full or half)

▲ **Important!** By default, all of the IntraSwitch's ports are set to full auto-negotiation.

## Configuring an IntraSwitch's Port for Auto-negotiation:

- 1** Open the Port Management Menu by typing **p** in the Configuration Menu.
- 2** Select the port to be enabled/disabled by typing **s**, enter the port number. Press **Return**
- 3** Type **a** to toggle the port's auto-negotiation status to **enabled**  
Auto-negotiation is changed and displayed at the top of the screen next to **Auto-Neg:**

## Setting Broadcast (BC) Filtering

- 1** To configure the BC filter, type **v** in the Port Configuration Menu. The Advance Port Configuration Menu will appear on the screen.
- 2** Type **o** in the Advanced Port Configuration Menu to toggle the BC filter option for the port.



- 3 If the desired operation is BC filter enabling, press **y** at the confirmation prompt, or press **n** to cancel the operation.  
The BC filter for the selected port is toggled.

### Modifying Auto-negotiation Advertisement

- 1 To modify the auto-negotiation advertisement for a port, Type **v** in the Port Configuration Menu. The Advanced Port Configuration Menu appears on the screen.
  - 2 type **v** in the Advanced Port Configuration Menu to modify the port's auto-negotiation advertisement.
  - 3 Enter any combination of [ABCD] at the prompt. The user can select individual or any other combination with the available four options.
  - 4 Press **Return**  
The port's auto-negotiation advertisement is changed to the requested values.
- △ *Note:* The options **s**, **n**, and **p** on the Advanced Port Configuration Menu bring up the desired port.
- Type **q** to return to the previous menu after completing the configuration

## Spanning Tree Configuration

This menu allows you to view and configure the IntraSwitch's SpanningTree parameters.

The unit is shipped with SpanningTree **enabled** on all ports. You cannot disable SpanningTree on an individual port basis. See Chapter 7, "Advanced Management" for use of this menu to configure the SpanningTree Protocol.

## Forwarding Database/Security Configuration

This menu allows the user to view and search for addresses in the IntraSwitch's MAC Forwarding Table. It also provides the option for displaying MAC addresses and IP/MAC binding by individual port.

The MAC Forwarding Table is a table of node addresses that the IntraSwitch automatically builds by "listening and learning." It performs this task by monitoring the packets that pass through the IntraSwitch, checking the source and destination addresses, and then recording the source address information in the table.

The IntraSwitch uses the information in this table to decide whether a frame should be forwarded to a particular destination port or "flooded" to all the ports other than the received port. Each entry consists of the MAC address of the device and an identifier for the port on which it was received.

△ **Note:** The MAC address table can hold a maximum of 8,192 entries.

To access the Forwarding DB/Security Configuration Menu, type **f** in the Configuration Menu. A screen similar to Figure 5-10 appears.

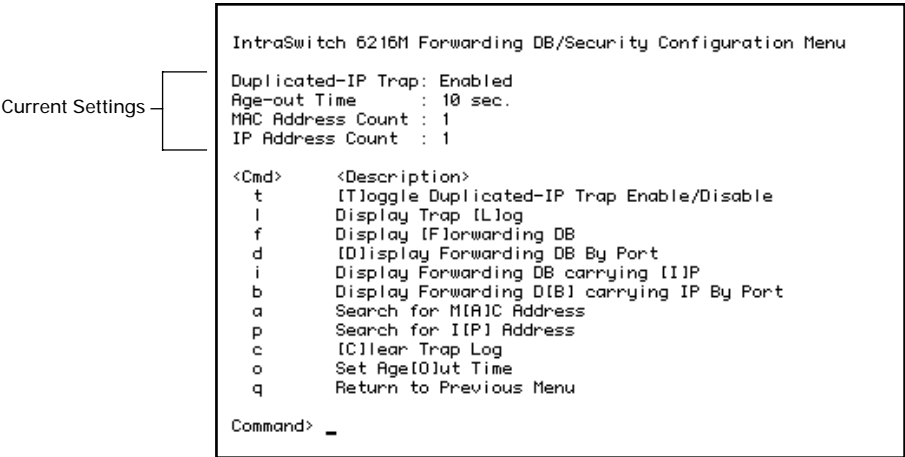


Figure 5-10 Forwarding DB/Security Configuration Menu

Current Settings

Table 5-9 explains each setting on the Forwarding DB/Security Configuration Menu.

For information on using the menu, see:

- ❑ “Displaying the MAC Address Table” — page 5-29
- ❑ “Searching the MAC Address Table” — page 5-30
- ❑ “Setting the MAC Address Age-Out Time” — page 5-31
- ❑ “Enabling the Duplicated-IP Trap” — page 5-32
- ❑ “Viewing the Trap Log” — page 5-32

Table 5-9 Security Configuration Menu Settings

| Setting            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Duplicated-IP Trap | <p>The status of the Duplicated-IP Trap.</p> <p>Enabled — IntraSwitch logs the duplicate IP address along with the owner and spoofer MAC address in the trap log which can be displayed using the <code>I</code> command in the Forwarding Database/Security Configuration menu, and also sends a trap to the receiving trap stations if a duplicate IP address is detected.</p> <p>Disabled — the duplicate-IP Trap is disabled. The IntraSwitch does NOT send a trap if a duplicate IP address is detected.</p> |
| Age-Out Time       | <p>The current age-out time for retaining addresses in the table (the default is 300 seconds).</p> <p>This is the number of seconds an address remains in the table after it is learned by the IntraSwitch.</p>                                                                                                                                                                                                                                                                                                   |
| MAC Address Count  | The number of entries currently in the MAC Address Table.                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| IP Address Count   | The number of entries in the MAC Address Table that contain a corresponding IP address.                                                                                                                                                                                                                                                                                                                                                                                                                           |

### Displaying the MAC Address Table

The MAC address table can be displayed with or without IP addresses. To view the MAC address table:

- 1 Open the **Forwarding DB/Security Configuration** Menu by typing `f` in the Configuration Menu.
  - 2 Type `f` to display the MAC address table with MAC addresses and corresponding ports.  
Type `i` to display the MAC address table with MAC addresses, their corresponding IP addresses, and corresponding ports.
- △ **Note:** The **Age** field in the MAC address table is the **time to be aged** of the entries.
- △ **Note:** **Self** in the port number column represents the Switch MAC address and IP address.

Entry Type : ( D = Dynamic , S = Static )

| Port | Entry | MAC Address       | Age (Seconds) |
|------|-------|-------------------|---------------|
| Self | S     | 00:00:94:AA:02:18 | 0             |

End of list , press any key to continue...\_

Figure 5-11 Display Forwarding Database Menu

- 3

View the information that is displayed.
- 4

Press any key to exit the MAC address table and return to the Forwarding DB/Security Configuration Menu.
- 5

Type **d** and then the port number to display MAC address learned on a port. Enter port Number next to **Enter Port Number:** prompt and press **Return**. This displays the MAC address on this port.
- 6

Type **b** and then the port number to display MAC/IP binding on a port. Enter port number next to **Enter Port Number** prompt and press **Return**. This displays the IP/MAC binding on this port.

Searching the MAC Address Table

The MAC address table can be searched by MAC address or by IP address. To search the MAC address table for a specific MAC address or an IP address:

- 1

Open the **Forwarding DB/Security Configuration** Menu by typing **f** in the Configuration Menu.
- 2

Type **a** to search for a MAC address.  
Type **p** to search for an IP address.

- 3** Type the MAC address or the IP address you want to search for at the prompt.
- 4** Press **Return**  
The address, if located, is displayed. If the address is not located, a message appears stating so.

### Setting the MAC Address Age-Out Time

This option sets the Age-Out Time for the MAC Forwarding Table.

The Age-Out Time is the number of seconds that addresses remain in the table after being learned by the IntraSwitch. The default is **300**seconds.

To set the MAC address Age-Out Time:

- 1** Open the **Forwarding DB/Security Configuration** Menu by typing **f** in the Configuration Menu.
- 2** Type **o** to set the MAC Address Age-Out Time.
- 3** Enter the new Age-Out time (in seconds) at the prompt.
- 4** Press **Return**  
The MAC Address Age-Out Time is changed and is displayed at the top of the screen next to "**Age-Out Time**"

### Enabling the Duplicated-IP Trap

The IntraSwitch logs the duplicate IP address along with the owner and spoofer MAC address in the trap log which can be displayed using the **I** command in the Forwarding Database Security Configuration menu, and also sends a trap to the receiving trap stations if a duplicate IP address is detected.

To enable the Duplicated-IP Trap:

- 1 Open the **Forwarding DB/Security Configuration** Menu by typing **f** in the Configuration Menu.

- 2 Type **t** to toggle the Duplicated-IP Trap to **enabled**

The Duplicate-IP Trap is enabled. Its status appears at the top of the screen next to “**Duplicate-IP Trap**:

### Viewing the Trap Log

The trap log displays all of the traps that the IntraSwitch has generated since the last time the log was cleared.

△ **Note:** The trap log holds a maximum of 128 entries.

- 1 Open the **Forwarding DB/Security Configuration** Menu by typing **f** in the Configuration Menu.

- 2 Type **I** to display the trap log.  
The trap log appears, displaying the last 128 traps the IntraSwitch has generated (or the number of traps the IntraSwitch has generated since the last time the log was cleared).

- 3 Press any key on your keyboard to exit the trap log and return to the Security Configuration Menu.

## 4 To clear the log, type **c** in the Security Configuration Menu.

### Image File Downloading Configuration

Typing **g** in the Configuration Menu allows the user to select the Image File Downloading Configuration Menu.

Current Settings —

```
IntraSwitch 6216M Image File Downloading Configuration Menu

<Cmd>      <Description>
t          [T]FTP Image File Downloading Configuration
x          [X]Y/ZMODEM Image File Downloading Configuration
q          Return to Previous Menu

Command> _
```

Figure 5-12 Image File Downloading Configuration Menu

This menu allows you to select the type of download action. The option “**t**” takes you to In-band TFTP downloading option and the “**x**” option takes you to the serial download option.

When Asanté issues a new version of software for the IntraSwitch, you can obtain it from Asanté’s Word Wide Web site or by contacting Asanté’s Technical Support (see Appendix C, “Technical Support”).

### Image Downloading Through TFTP

To download a new image file In-band through TFTP, type **t** in the Image Download Configuration Menu (option **g** in Configuration Menu). A screen similar to Figure 5-13 appears.



```
IntraSwitch 6216M TFTP Image File Downloading Menu

Running Image Version/Date: 1.00U/Jul 29 1998 15:55:34
Bank 1 Image Version/Date: 1.00T/Jul 27 1998 14:23:09
Bank 2 Image Version/Date: 1.00U/Jul 29 1998 15:55:34 (Running)

Protocol:          TFTP
Image Server IP:   192.203.52.211
Image File Name:   ent100u.ima
Retry Count:       3
Destination Bank:  1

<Cmd>   <Description>
s       Set Image [S]erver IP Address
f       Set Image [F]ile Name
d       [D]ownload Image File
b       Download and [B]oot Image File
c       Set Retry [C]ount
a       Toggle Destination [B]ank
q       Return to Previous Menu

Command>
```

Figure 5-13 Image Downloading Menu

Current Settings

Table 5-10 explains each setting on the Image Downloading Menu. For information on using the menu, see:

- ❑ “Performing a Software Upgrade at Runtime” on page 5-35.

Table 5-10 Image Downloading Menu Settings

| Setting                    | Description                                                                                                                              |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Running Image Version/Date | The version and compilation date of runtime code that is currently running on the IntraSwitch. This should be the same as the Boot Bank. |
| Bank 1 Image Version/Date  | The version and compilation date of runtime code that is stored in Bank 1.                                                               |
| Bank 2 Image Version/Date  | The version and compilation date of runtime code that is stored in Bank 2.                                                               |

| Setting          | Description                                                                                                               |
|------------------|---------------------------------------------------------------------------------------------------------------------------|
| Protocol         | The current method being used to download a software image file from the network.<br>This protocol is always set to TFTP. |
| Image Server IP  | The IP address of the network server containing the IntraSwitch's software image file.                                    |
| Image File Name  | The software image file's name and network path.                                                                          |
| Retry Count      | The number of attempts the IntraSwitch makes to download the image file.                                                  |
| Destination Bank | The number of the destination bank to where the software file will be downloaded and stored.                              |

### Performing a Software Upgrade at Runtime

The software image file must be downloaded from a network management station on your network that contains capabilities.

To upgrade the IntraSwitch's software:

▲ **Important** Make sure the IntraSwitch is configured with an IP address.

- 1 Open the **TFTP Image File Downloading Configuration** menu by typing **t** in the Image File Downloading Configuration Menu.
- 2 Type **s** to set the **Image Server Address**
- 3 Enter the IP address of the server containing the image file at the prompt, then press **Return**
- 4 Type **f** to set the **Image File Name**
- 5 Enter the image file's name and network path at the prompt, then press **Return**
- 6 Type **c** to set the **Retry Count**

- 7** Enter the number of attempts the IntraSwitch will make to download the file, then press **Return**
- 8** Select the Destination Image Bank through the **a** option.
- 9** Type **d** to **Download the Image File** to the Destination Bank (this option allows you to change the boot bank at a later time and use the Reset Menu to schedule a reset, at which time the new software will be used).  
or  
Type **b** to **Download the Image File and Reset** the IntraSwitch (this option immediately boots the IntraSwitch with the new version of software).
- 10** Type **q** to return to the Configuration menu.

## Serial Downloading Configuration

This menu allows you to download a new software image file for the IntraSwitch without interrupting the current operation.

To download a new image through the IntraSwitch's serial port, type **x** in the Image File Download Configuration Menu. The following screen appears.

```
IntraSwitch 6216M X/Y/ZMODEM Image File Downloading Menu

Running Image Version/Date: 1.00U/Jul 29 1998 15:55:34
Bank 1 Image Version/Date: 1.00T/Jul 27 1998 14:23:09
Bank 2 Image Version/Date: 1.00U/Jul 29 1998 15:55:34 <Running>

Download Protocol: ZMODEM
Current Baud Rate: 9600 bps
Destination Bank: 1

<Cmd>      <Description>
x          Set download protocol to [X]MODEM
y          Set download protocol to [Y]MODEM
z          Set download protocol to [Z]MODEM
c          [C]hange Baud Rate Setting
d          [D]ownload Image File
b          Download and [B]oot Image File
a          Toggle Destination B[an]k
q          Return to Previous Menu

Command> _
```

**Figure 5-14 X/Y/ZModem Image File Downloading Menu**

## Current Settings

Table 5-11 explains each setting on the X/Y/Z Downloading Menu.

**Table 5-11 X/Y/Z Downloading Menu Table**

| Setting                           | Description                                                                                                                          |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>Download Protocol</b>          | The current setting of the serial download protocol that IntraSwitch uses.                                                           |
| <b>Current Baud Rate</b>          | The current baud rate of the IntraSwitch's serial port.                                                                              |
| <b>Running Image Version/Date</b> | The version and compilation time of runtime code that is currently running on IntraSwitch. This should be the same as the Boot Bank. |
| <b>Bank 1 Image Version Date</b>  | The version and compilation date and time of runtime code that is currently stored in Image Bank 1.                                  |
| <b>Bank 2 Image Version Date</b>  | The version and compilation date and time of runtime code that is currently stored in Image Bank 2.                                  |
| <b>Destination Bank</b>           | The number of the destination bank where the software will be downloaded and stored.                                                 |
| <b>Download Protocol</b>          | Current serial download protocol.                                                                                                    |

| Setting           | Description                |
|-------------------|----------------------------|
| Current Baud Rate | Current console baud rate. |
| Destination Bank  | Current Destination Bank   |

Performing Software Upgrade

To upgrade the IntraSwitch’s software through its serial port:

- 1 Open the X/Y/Z Modem Image Downloading Menu.
- 2 Type **x** or **y** or **z** to select the corresponding protocol.
- 3 Type **c** to select the console baud rate. The Baud Rate Setting window appears as shown in Figure 5-15. The maximum baud rate that is currently supported is 57,600 bps.

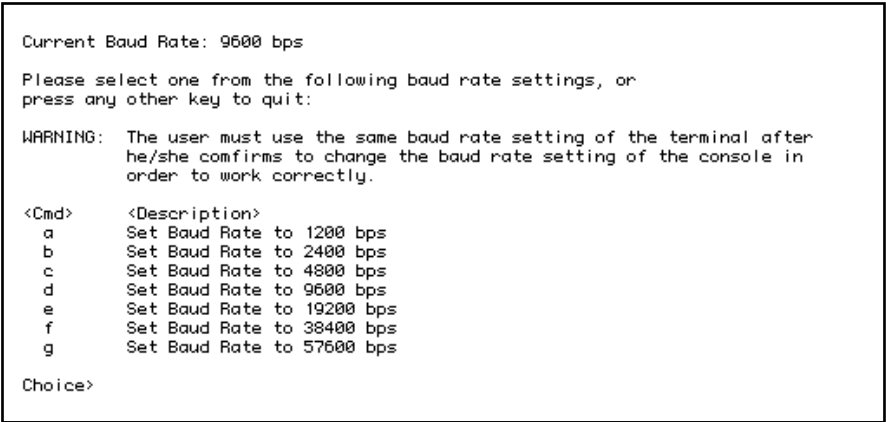


Figure 5-15 Setting Baud Rate

- 4** Select one of the options in the above screen to select the required baud rate and confirm it by typing **y**.
  - 5** Type **a** to select the Destination Bank.
  - 6** Use any serial communications software like Procomm Plus, HyperTerminal, ZTerm, etc., to download the image file. Follow the instruction manual of the serial communications software for file transfer instructions.
- △ **Note:** The terminal on which serial communications software is running must have the same baud rate as the Switch console baud rate. The connection between the terminal and the switch Console port is RS232C straight-through cable.
- 7** Type **d** to download to the selected destination bank or **b** to download and reset.
  - 8** Type **q** to return to the previous menu after performing a successful download.
- △ **Note:** The baud rate default for Console management is 9600 bps. If you select a baud rate for the console port, other than 9600 bps, the screen will display garbage data until the connected terminal is set to the same baud rate as the console.

## System Reset Options

The System Reset Options Menu allows you to reset the IntraSwitch by performing a “warm” reboot. It also allows you to schedule a reset up to 24 hours in advance.

To reset the IntraSwitch, type **r** in the Configuration Menu. A screen similar to Figure 5-16 appears.

Current Settings

```
IntraSwitch 6216M System Reset Configuration Menu

Reset Status:      <null>
Reset Countdown:  1 sec.

<Cmd>      <Description>
s           [S]chedule Reset Time
c           [C]ancel Reset
r           [R]eset Switch
d           Reset Switch to Factory [D]efault
i           Reset Switch to Factory Default except [I]P and Bootstrap
q           Return to Previous Menu

Command>
```

Figure 5-16    Reset Menu

Current Settings

Reset menu settings are shown in the following table.

For information on using the menu, see:

- ❑ “Resetting the IntraSwitch” in Chapter 5
- ❑ “Scheduling a Reset” in Chapter 5

Table 5-12    Reset Menu Settings

| Setting                                              | Description                                                                                                     |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Schedule Reset Time                                  | Number of seconds until the scheduled reset.                                                                    |
| Cancel Reset                                         | Cancels the scheduled reset.                                                                                    |
| Reset Switch                                         | Resets the IntraSwitch immediately.                                                                             |
| Reset Switch to Factory Default                      | Resets the switch to factory default setting.                                                                   |
| Reset Switch to Factory Default except IP& bootstrap | Resets the IntraSwitch and its EEPROM to the factory default without modifying the IP& Bootstrap configuration. |

## Resetting the IntraSwitch

To reset the IntraSwitch:

- 1** Open the Reset Menu by typing **r** in the Configuration Menu.
- 2** Type **r** to reset the IntraSwitch.
- 3** Type **y** to confirm the reset.
- 4** Type **n** to cancel the reset.

△ **Note:** Typing **d** will reset the IntraSwitch to the factory default. Typing **i** will reset the IntraSwitch to the factory default without affecting its IP and Bootstrap configuration.

## Scheduling a Reset

You can schedule the IntraSwitch to automatically perform a reset from one second up to 24 hours (86,400 seconds) in advance.

To schedule a reset:

- 1** Open the Reset Menu by typing **r** in the Configuration Menu.
  - 2** Type **s** to schedule a reset time (within the specified range).
  - 3** Enter the number of seconds (within the specified range) the IntraSwitch will wait before it automatically resets.
- ▲ **Important!** The maximum number of seconds that can be entered is **86400** (24 hours).



## 4 Press **Return**

The IntraSwitch is set to automatically reset after the number of seconds that are specified elapse.

## System Log

This menu allows you to view the IntraSwitch's System Log. The System Log records and displays any major system events occurring on the IntraSwitch (such as a fatal error, etc.).

To view system log information, type **I** from the Configuration Menu. A screen similar to Figure 5-17 appears.

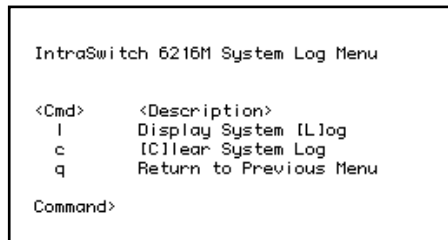


Figure 5-17 System Log Menu

For information on using the menu, see:

- ☐ “Viewing the System Log” — page 5-42
- ☐ “Clearing the System Log” — page 5-43

## Viewing the System Log

- 1 Open the System Log Menu by typing **I** in the Configuration Menu.
- 2 Type **I** to display the current system log. A screen similar to Figure 5-18 appears.

```

No.   D: H: M: S   Event
1. 000:00:00:00 MII 1 module plugged in. Module type: FL
2. 000:00:00:00 Management Port: 1
3. 000:00:00:00 System up
4. 000:00:00:00 MII 1 module plugged in. Module type: FL
5. 000:00:00:00 Management Port: 1
6. 000:00:00:00 System up
7. 000:00:00:00 MII 1 module plugged in. Module type: FL
8. 000:00:00:00 Management Port: 1
9. 000:00:00:00 System up
10. 000:00:00:00 MII 1 module plugged in. Module type: FL
11. 000:00:00:00 Management Port: 1
12. 000:00:00:00 System up
13. 000:00:00:00 MII 1 module plugged in. Module type: FL
14. 000:00:00:00 Management Port: 1
15. 000:00:00:00 System up
16. 000:00:00:00 MII 1 module plugged in. Module type: FL
17. 000:00:00:00 Management Port: 1
18. 000:00:00:00 System up
19. 000:00:00:00 MII 1 module plugged in. Module type: FL
20. 000:00:00:00 Management Port: 1
21. 000:00:00:00 System up
22. 000:00:00:00 MII 1 module plugged in. Module type: FL
Press any key to continue..._

```

Figure 5-18 System Log Display

The system log displays any major system events that have occurred on the IntraSwitch.

If no major events have occurred, "System up" messages are displayed.

△ **Note:** The System Log holds a maximum of 64 entries.

- 3** Press any key on your keyboard to display the next page of System Log information.  
To exit this screen, press **ctrl-c**

### Clearing the System Log

- 1** Open the System Log Menu by typing **l** in the Configuration Menu.
- 2** Type **c** to clear the current System Log.  
The System Log is cleared.

### Set Menu Idle Time-out

The Set Menu Idle Time-out option allows the user to set the Console User Interface Time-out and the Telnet User Interface Time-out periods.

Typing **t** in the Configuration Menu brings up the following screen:

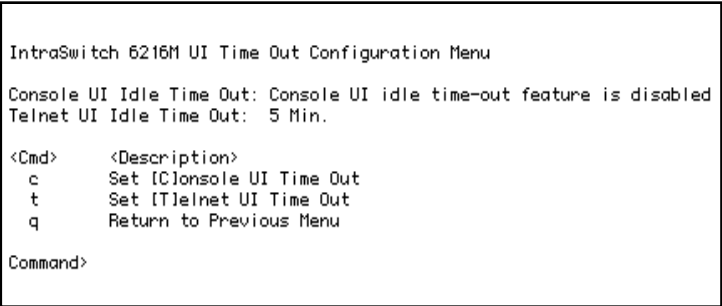


Figure 5-19 IntraSwitch UI Time-out Configuration Screen

### Current Settings

The following table explains the settings in the UI Time-out Configuration Menu.

Table 5-13 UI Time-out Settings

| Setting                  | Description                                                                         |
|--------------------------|-------------------------------------------------------------------------------------|
| Console UI Idle Time-out | Duration of time the Console will remain idle before returning to the main menu.    |
| Telnet UI Idle Time-out  | Duration of time the Console will remain idle before closing the Telnet connection. |

### To set the Console Idle Time-out Period

- 1 Type **c** in the UI Time-out Configuration Menu.  
The current menu idle time-out is displayed in minutes, as shown below.

```
Enter Menu idle time-out in minute <0-60; 0 means no time-out> >
```

Figure 5-20 Current Idle Time-out command line

- 2 Enter the Idle Time-out in minutes at the prompt.  
 Δ **Note** The default time-out is 5 minutes.  
 To exit this option without making any changes, press **ctrl-c**.
- 3 Press **Return**  
 The Console Idle Time-out period is changed.

### To set the Telnet Idle Time-out period:

- 1 Type **t** in the UI Time-out Configuration Menu.  
The current telnet idle time-out is displayed in minutes, as shown below.

```
Enter Telnet Menu idle time-out in minute <1-60> > _
```

Figure 5-21 Telnet Idle Time-out period

- 2 Enter the Idle Time-out in minutes at the prompt.  
 Δ **Note** The default time-out is 5 minutes.  
 To exit this option without making any changes, press **ctrl-c**.

### 3 Press **Return**

The Telnet Idle Time-out Period is changed.

After configuring the desired time-outs, type **q** to return to the previous menu.

## Changing the Password

The Change Password option allows you to change the password needed to access the Configuration Menu.

▲ **Important** The factory default password is **Asante**. The password is case-sensitive.

To change the current Local Management Interface (Console) password:

1 Type **c** in the Configuration Menu.

2 Type current password at the prompt.

3 Type a new password at the “Enter Current Password” prompt.

▲ **Important** The password is case-sensitive. The password must be a minimum of one character and a maximum of 20 characters in length. The password takes any ASCII code.

4 Press **Return**

5 Type the new password again at the confirmation password prompt.

To cancel this change, type **ctrl-c**

6 Press **Return**

The password is changed.

Type **q** to return to the Configuration Menu.

## Global Port Configuration

The Global Port Configuration option allows the user to change the configuration information for all ports simultaneously, and to change the configuration information of a single port if necessary. This feature is helpful in cases where the user wants the same configuration for all or any one port.

The option **o** in the Configuration Menu will bring up the Global Port Configuration menu.

```

IntraSwitch 6216M Global Port Configuration Menu

Port Operating Status : [01] ----- [09] -----
Port Auto Negotiation : [01] -***** [09] *****-
Port Speed/Duplex     : [01] Fhhhhhhh [09] hhhhhhhh

<Cmd>    <Description>
h        [H]elp for Legends
e        [E]nable Global Auto-Negotiation
d        [D]isable Global Auto-Negotiation
t        Select Global 10 Mbps
u        Select Global 100 Mbps
f        Select Global [F]ull Duplex
l        Select Global Ha[l]f Duplex
v        Modify Global Auto-Negotiation Adv[er]tisement
a        Display Port [A]uto Advertisement Summary
p        Select a [P]ort for configuration change
q        Return to previous menu

Command> _

```

Figure 5-22 Global Port Configuration Menu

## Current Settings

The following table explains the current settings.

Table 5-14 Global Port Configuration Settings

| Setting               | Description                                                                                                                                                                                         |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Port Operating Status | Reflects the System ports' operating status.                                                                                                                                                        |
| Port Auto-negotiation | Reflects the System ports' current auto-negotiation enable/disable information.<br>Note: For MII-FX and MII-FL, there is no auto-negotiation, and hence their auto-negotiation is displayed as "-". |
| Port Speed/Duplex     | Reflects the System ports' current speed and duplex information.                                                                                                                                    |

## Global Configuration Operations

- 1 Type **h** to view the help screen which displays the meaning of the symbols in the Current Setting.

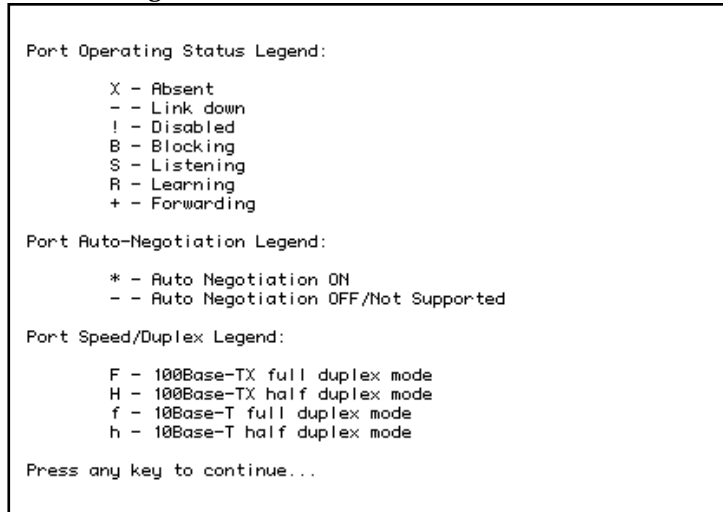


Figure 5-23 Global Port Configuration Help Menu

- 2 Type **e** to enable auto-negotiation for all ports simultaneously.
- 3 Type **d** to enable auto-negotiation for all ports simultaneously.
- 4 Type **t** to set all ports to 10Mbps speed. If any of the ports have auto-negotiation enabled, typing this option prompts a Disable Global Auto-negotiation First message. This means this operation will be effected only if auto-negotiation is disabled for all ports.

- 5 Type **u** to set all ports to 100Mbps speed. If any of the ports have auto-negotiation enabled, typing this option prompts a Disable Global Auto-negotiation First message. This means this operation will be effected only if auto-negotiation is disabled for all ports.
- 6 Type **f** to set all ports to full duplex mode. If any of the ports have auto-negotiation enabled, typing this option prompts a Disable Global Auto-negotiation First message. This means this operation will be effected only if auto-negotiation is disabled for all ports.
- 7 Type **l** to set all ports to half-duplex mode. If any of the ports have auto-negotiation enabled, typing this option prompts a Disable Global Auto-negotiation First message. This means this operation will be effected only if auto-negotiation is disabled for all ports.
- 8 Type **v** to modify all of the ports with the new auto-negotiation advertisement.  
 Δ **Note:** All of the options above, except option **h**, **prompt for confirmation** by **y** to confirm and **n** to cancel the operation.
- 9 Type **a** to view the current auto-negotiation advertisement capability of all ports within the system.



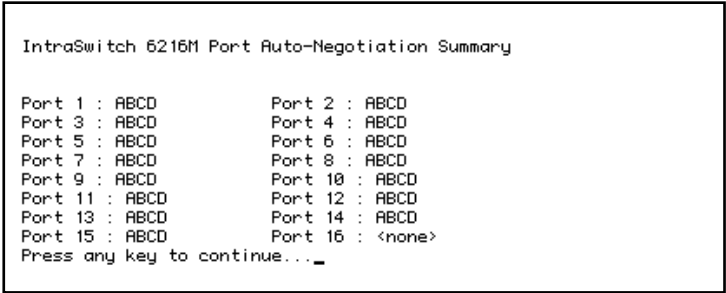


Figure 5-24 Auto-negotiation Advertisement Summary Screen

Type **p** to select an individual port for configuration change. Typing **p** prompts **Enter port number** message. Enter the port number next to it. This will bring up the Port Configuration Menu.

## Statistics Menu

The Statistics menu displays current statistics for the IntraSwitch on a per-port basis. The statistics displayed include traffic, collisions, good frames, bad frames, and FCS errors.

Δ **Note:** See Chapter 6, “Status Monitoring, Traffic, and Statistics” for information on using this menu to view the IntraSwitch’s statistics.

# 6

## Status Monitoring and Statistics

This chapter describes how to view the IntraSwitch 6216M and 6224's current operating information, system information, and statistics.

This chapter contains the following sections:

- ☐ Viewing Current Operating Information
- ☐ Viewing IntraSwitch System Information
- ☐ Viewing Statistics

# Monitoring the IntraSwitch

## Viewing Current Operating Information

The IntraSwitch’s current operating information can be viewed by accessing the General Information Menu within the IntraSwitch’s Local Management Interface.

To view the IntraSwitch’s current operating information:

- 1 Access the IntraSwitch’s Local Management Interface.
- Δ **Note:** See Chapter 4, “Setting Up For Management” for instructions on how to connect to the Local Management Interface.
- 2 Type **g** in the Local Management Interface Main Menu. A screen similar to Figure 6-1 appears:

```
IntraSwitch 6216M General Information Menu
System up for: 002days, 22hrs, 36mins, 26secs
Software Version
  Running Image Version/Date: 1.00U/Jul 29 1998 15:55:34
  Bank 1 Image Version/Date: 1.00T/Jul 27 1998 14:23:09
  Bank 2 Image Version/Date: 1.00U/Jul 29 1998 15:55:34 <Running>
Administration Information
  Switch Name: 6216 Test switch
  Switch Location: Breen's Cube
  Switch Contact: <none>
System Information
  DRAM Size: 4MB          Console Baud Rate : 9600 bps
  Flash Size: 1.5MB
  EEPROM Size: 32KB
Switch MAC Address, IP Address, Subnet Mask and Router
  MAC Address: 00:00:94:AA:02:18
  IP Address: 192.203.52.62
  Subnet Mask: 255.255.255.0
  Router: 192.203.52.1
Bootstrap Configuration
  Boot Load Mode: LOCAL
  TFTP Server: 192.203.52.211
  Boot File Name: ent100u.ima
Press any key to continue...
```

Figure 6-1 General Information Menu

Table describes each parameter. To exit the General Information Menu, press the **space bar** on your keyboard.

## Viewing Current Operating Information

Table 6-1 General Information Menu Parameters

| Setting                    | Description                                                                             |
|----------------------------|-----------------------------------------------------------------------------------------|
| Running Image Version/Date | The version and compilation date of runtime code that is currently running on the unit. |
| Bank 1 Image Version/Date  | The version and compilation date of runtime code that is stored in Bank 1.              |
| Bank 2 Image Version/Date  | The version and compilation date of runtime code that is stored in Bank 2.              |
| Switch Name                | The name assigned to the IntraSwitch.                                                   |
| Switch Location            | The physical location of the IntraSwitch.                                               |
| Switch Contact             | Name of the person responsible for the unit.                                            |
| DRAM Size                  | The size, in megabytes (MB), of the unit's Dynamic Random Access Memory.                |
| Flash Size                 | The size, in MB, of the IntraSwitch flash memory. Flash memory is non-volatile RAM.     |
| EEProm Size                | Size, in kilobytes, of the unit's EEPROM.                                               |
| Console Baud Rate          | The current setting of the console port's baud rate/speed.                              |
| MAC Address                | The IntraSwitch's hardware address.<br><b>Note:</b> This address cannot be changed.     |
| IP Address                 | The unit's IP (Internet Protocol) address.                                              |
| Subnet Mask                | The IntraSwitch's IP subnet mask.                                                       |
| Router                     | The IP address of the default gateway router to which the IntraSwitch belongs.          |
| Boot Load Mode             | The current method the unit is using to load its software.                              |
| TFTP Server                | The IP address of the TFTP server configured for the IntraSwitch.                       |
| Boot File Name             | The name and network path of the IntraSwitch's software file.                           |

Viewing  
IntraSwitch  
System  
Information

You can view system information on the IntraSwitch, and any installed expansion modules, by accessing the Port Management Menu within the Local Management Interface. See Chapter 4, “Setting Up For Management” for instructions on how to connect to the Local Management Interface. To view IntraSwitch system information:

- 1 Access the IntraSwitch’s Local Management Interface.
- 2 Type **c** in the Local Management Interface Main Menu to open the Configuration Menu. The “Enter Password” prompt appears.
- 3 Type your password at the prompt, then press **Return**
- 4 Type **p** to open the Port Configuration Menu. A screen similar to Figure 6-2 appears.

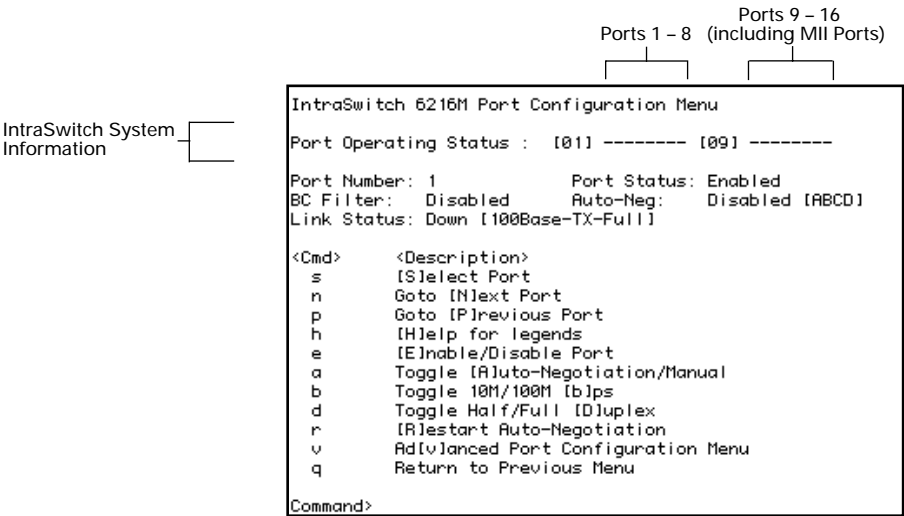


Figure 6-2 Port Configuration Menu

The system information is displayed at the top of the screen, as highlighted in Figure 6-2. The following table describes the IntraSwitch system information.

Table 6-2      IntraSwitch System Information

| Setting               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Port Operating Status | <p>The status of the IntraSwitch. This field displays status symbols for each of the IntraSwitch's ports.</p> <p>Port Symbols:</p> <p>X — no port exists (e.g., an Asanté MII module is not installed in the expansion slot).</p> <p>- (negative symbol) — a port exists but there is no link on the port.</p> <p>! — the port is disabled.</p> <p>B — the port is in a blocking state.</p> <p>S — the port is in a listening state.</p> <p>R — the port is in a learning state.</p> <p>+ — the port is in a forwarding state.</p> <p>▲ <b>Important!</b> Type <b>h</b> "Help for Legends" in Port Configuration Menu for a list of the port symbols.</p> |

## Viewing Statistics

Viewing statistics on a regular basis allows you to evaluate your network's performance. You can view current statistics for the IntraSwitch on a per-port basis by accessing the Statistics Menu in the Local Management Interface.

To view statistics:

- 1      Access the IntraSwitch's Local Management Interface.  
  
    Δ **Note:** See Chapter 4, "Setting Up For Management" for instructions on connecting to the Local Management Interface.
- 2      Type **s** in the Local Management Interface Main Menu.  
        A screen similar to Figure 6-3 appears:

|                                   |           |           |            |           |           |                    |        |
|-----------------------------------|-----------|-----------|------------|-----------|-----------|--------------------|--------|
| IntraSwitch 6216M                 |           |           | Statistics |           |           | Elapsed=2:22:37:09 |        |
| Port                              | Rx Frames | Tx Frames | Errors     | Rx Frames | Tx Frames | Rate               | Errors |
| 1                                 | 0         | 0         | 0          | 0         | 0         | 0                  | 0      |
| 2                                 | 0         | 0         | 0          | 0         | 0         | 0                  | 0      |
| 3                                 | 0         | 0         | 0          | 0         | 0         | 0                  | 0      |
| 4                                 | 0         | 0         | 0          | 0         | 0         | 0                  | 0      |
| 5                                 | 0         | 0         | 0          | 0         | 0         | 0                  | 0      |
| 6                                 | 0         | 0         | 0          | 0         | 0         | 0                  | 0      |
| 7                                 | 0         | 0         | 0          | 0         | 0         | 0                  | 0      |
| 8                                 | 0         | 0         | 0          | 0         | 0         | 0                  | 0      |
| 9                                 | 0         | 0         | 0          | 0         | 0         | 0                  | 0      |
| 10                                | 0         | 0         | 0          | 0         | 0         | 0                  | 0      |
| 11                                | 0         | 0         | 0          | 0         | 0         | 0                  | 0      |
| 12                                | 0         | 0         | 0          | 0         | 0         | 0                  | 0      |
| 13                                | 0         | 0         | 0          | 0         | 0         | 0                  | 0      |
| 14                                | 0         | 0         | 0          | 0         | 0         | 0                  | 0      |
| 15                                | 0         | 0         | 0          | 0         | 0         | 0                  | 0      |
| 16                                | 0         | 0         | 0          | 0         | 0         | 0                  | 0      |
| since last reset, counters quit _ |           |           |            |           |           |                    |        |

Figure 6-3 Statistics Menu

The received frames, transmitted frames, and error frames are displayed on this screen. The following table describes statistics fields on the statistics screen.

Table 6-3 Statistics Fields on Statistics Screen

| Statistics | Description                                                                                                                                                                               |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rx Frames  | Total number of frames received on the port since system up                                                                                                                               |
| Tx Frames  | Total number of frames transmitted on the port since system up.                                                                                                                           |
| Errors     | Total number of frames that are received with errors on this port since system up.<br><br>The error includes the following:<br><br>CRC error, Runt frames, Frame-too-long, Jabber errors. |

Typing l brings up the screen which shows statistics since the last reset.

| IntraSwitch 6216M                         |           | Statistics Since Last Reset |        |           | Elapsed=2:22:37:32 |        |
|-------------------------------------------|-----------|-----------------------------|--------|-----------|--------------------|--------|
| Port                                      | Rx Frames | Tx Frames                   | Errors | Rx Frames | Tx Frames          | Errors |
| 1                                         | 0         | 0                           | 0      | 0         | 0                  | 0      |
| 2                                         | 0         | 0                           | 0      | 0         | 0                  | 0      |
| 3                                         | 0         | 0                           | 0      | 0         | 0                  | 0      |
| 4                                         | 0         | 0                           | 0      | 0         | 0                  | 0      |
| 5                                         | 0         | 0                           | 0      | 0         | 0                  | 0      |
| 6                                         | 0         | 0                           | 0      | 0         | 0                  | 0      |
| 7                                         | 0         | 0                           | 0      | 0         | 0                  | 0      |
| 8                                         | 0         | 0                           | 0      | 0         | 0                  | 0      |
| 9                                         | 0         | 0                           | 0      | 0         | 0                  | 0      |
| 10                                        | 0         | 0                           | 0      | 0         | 0                  | 0      |
| 11                                        | 0         | 0                           | 0      | 0         | 0                  | 0      |
| 12                                        | 0         | 0                           | 0      | 0         | 0                  | 0      |
| 13                                        | 0         | 0                           | 0      | 0         | 0                  | 0      |
| 14                                        | 0         | 0                           | 0      | 0         | 0                  | 0      |
| 15                                        | 0         | 0                           | 0      | 0         | 0                  | 0      |
| 16                                        | 0         | 0                           | 0      | 0         | 0                  | 0      |
| since system u>p, r>eset, c>ounters q>uit |           |                             |        |           |                    |        |

Figure 6-4 Statistics Since Last Reset

The following table describes the fields in the Statistics Since Last Reset Table.

Table 6-4 Statistics Since Last Reset

| Statistics | Description                                                                                                                                                                               |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rx Frames  | Total number of frames received on the port since last reset                                                                                                                              |
| Tx Frames  | Total number of frames transmitted on the port since last reset.                                                                                                                          |
| Errors     | Total number of frames that are received with errors on this port since last reset.<br><br>The error includes the following:<br><br>CRC error, Runt frames, Frame-to-long, Jabber errors. |



To reset the counters in the above screen, type **r**. This resets all the counters to zero.

Typing **s** on this screen takes the user back to the Statistics Screen, which shows statistics since system up.

Typing **c** on both of the above screens takes the user to the Counters screen. The Counters screen appears similar to the figure below.

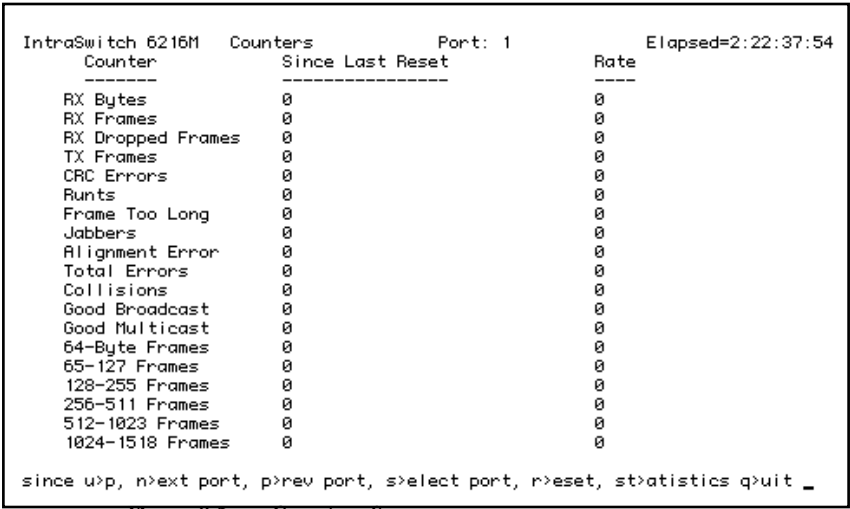


Figure 6-5 Counters Screen

The following table describes the Counters screen.

Table 6-5 Counters Screen Description

| Statistics | Description                                                                                           |
|------------|-------------------------------------------------------------------------------------------------------|
| Rx Bytes   | Total number of bytes received on a particular port.                                                  |
| Rx Frames  | Total number of packets received on a particular port. This includes broadcast and multicast packets. |

| Statistics        | Description                                                                                                                                                                                 |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rx Dropped Frames | Total number of frames that are dropped due to lack of buffers on a particular port.                                                                                                        |
| Tx Frames         | Total number of transmitted frames on a particular port.                                                                                                                                    |
| CRC Errors        | Frame count received on a particular port that is an integral number of octets but does not pass the FCS check.                                                                             |
| Runts             | Total number of frames shorter than 64 bytes received on a particular port.                                                                                                                 |
| Frame Too Long    | Total number of frames longer than 1518 bytes received on a particular port.                                                                                                                |
| Jabbers           | Total number of frames received that were longer than 1518 bytes (excluding framing bits but including FCS octets), and had either an FCS error or an alignment error on a particular port. |
| Total Errors      | Total number of error frames received on a particular port.                                                                                                                                 |
| Collisions        | Total number of collisions on a particular port.                                                                                                                                            |
| Good Broadcast    | Total number of good broadcast packets received on a particular port.                                                                                                                       |
| Good Multicast    | Total number of good multicast packets received on a particular port.                                                                                                                       |
| 64-Byte Frames    | Total number of packets received whose length is 64 octets (excluding framing bits but including FCS octets).                                                                               |
| 65-127 Frames     | Total number of packets received whose length is between 65 and 127 octets (excluding framing bits but including FCS octets).                                                               |
| 128-255 Frames    | Total number of packets received whose length is between 128 and 255 octets (excluding framing bits but including FCS octets).                                                              |
| 256-511 Frames    | Total number of packets received whose length is between 256 and 511 octets (excluding framing bits but including FCS octets).                                                              |
| 512-1023 Frames   | Total number of packets received whose length is between 512 and 1023 octets (excluding framing bits but including FCS octets).                                                             |
| 1024-1518 Frames  | Total number of packets received whose length is between 1024 and 1518 octets (excluding framing bits but including FCS octets).                                                            |

The Counters screen displays the above counters on a per port basis.

Typing **t** on the Counters screen brings up the Statistics screen.

Typing **q** on the above screen brings up the previous menu item.

- Δ **Note:** In the Statistics and Counters screens, “Real-time” means total number of frames received since system up time and “Rate” means the average number per second.

# 7

## Advanced Management

This chapter describes how to configure the Spanning Tree Protocol on the IntraSwitch 6216M and 6224.

This chapter contains the following sections:

- ❑ **Spanning Tree Protocol**
  - ❑ **How it Works**
  - ❑ **Enabling/Disabling STP**
  - ❑ **Configuring STP Parameters**
  - ❑ **Configuring STP Port Parameters**

# Advanced Management

---

## Spanning Tree Protocol

The Spanning Tree Protocol (STP) is a part of the IEEE 802.1d bridge specification. It provides fault tolerance on a network by detecting potential “bridged loops” and then removing them by blocking the appropriate ports to other switches.

For example, in a large network with multiple paths, there is a possibility that the same message will get broadcast all over the network through multiple paths, resulting in a great amount of extraneous network traffic, and possibly, network downtime. This “closed path” or “bridged loop” among the networks could be damaging because it could start an unending packet-passing process.

With the Spanning Tree Protocol applied to the network, a path between every pair of accessible nodes on the network is mapped, ensuring that there are no loops in all of the network paths.

△ **Note:** To explain STP more effectively, the IntraSwitch is defined as a bridge in this chapter.

### How it Works

The Spanning Tree Protocol requires the following:

- ❑ Communication between all the bridges on the network.
- ❑ One bridge to start as a master, or **Root Bridge**

The communication between the bridges is carried out using Bridge Protocol Data Units (BPDUs), which are transmitted in packets with a known multicast address.

△ **Note:** BPDU packets provide information to the Spanning Tree bridges about the configuration of the Spanning Tree network.

The Root Bridge is a central point from which the network is configured. It is selected on the basis of having the lowest **Bridge Identifier value**. This is a combination of the bridge's unique MAC address and a priority component defined for the bridge.

The Root Bridge generates BPDUs on all ports at a regular interval known as the **Hello Time**. All other bridges in the network have a Root Port. This is the port nearest to the Root Bridge, and it is used for receiving the BPDUs initiated by the Root Bridge.

### Enabling/ Disabling STP

The IntraSwitch is shipped with Spanning Tree enabled on all ports. It can be manually enabled or disabled following the instructions below. See Chapter 4, "Setting Up For Management" for information on accessing the Local Management Interface.

To enable or disable STP on your IntraSwitch:

- 1** Access the Local Management Interface.
- 2** Type **c** to open the Configuration Menu. The "Enter Password" prompt appears.
- 3** Type your password at the prompt.
- 4** Open the Spanning Tree Configuration Menu by typing **s** in the Configuration Menu. See Figure 7-1.
- 5** Type **t** to toggle STP to **enabled** or **disabled**. If you select **disabled**, you are prompted to confirm the change.

The STP status is changed. The status is displayed at the top of the screen next to **STP Status**.

For a description of the STP's current settings, see Table 7-1.

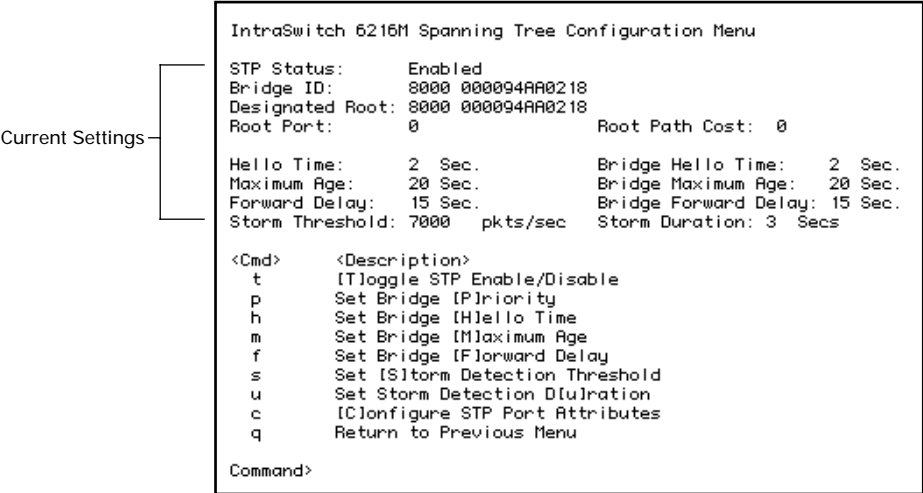


Figure 7-1 Spanning Tree Configuration Menu

Configuring STP Parameters

The IntraSwitch is shipped with the following STP default values:

- ☐ STP Status — enabled
- ☐ Switch Priority — 0 x 8000
- ☐ Maximum Age — 20 seconds
- ☐ Hello Time — 2 seconds
- ☐ Forward Delay — 15 seconds
- ☒ **Important!** You should NOT configure any STP parameters unless you have knowledge and experience with the IEEE 802.1d specification.

Table 7-1 Spanning Tree Configuration Menu Settings

| Setting         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Switch ID       | The identification number of the IntraSwitch. This value cannot be changed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| STP Status      | The status of Spanning Tree on the IntraSwitch.<br><b>Enabled</b> — Spanning Tree is enabled.<br><b>Disabled</b> — Spanning Tree is disabled.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Switch Priority | The priority value for this IntraSwitch switch.<br>The switch with the lowest priority value in a Spanning Tree becomes the <b>root bridge</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Maximum Age     | Determines how long the switch waits before trying to re-configure the network when it is the Root Bridge.<br>If the switch has not received a BPDU within the time specified, it will try to reconfigure the STP topology.<br>The default value is <b>20 seconds</b> . The range of permitted values is between 6 and 40 seconds.<br>Increasing the value of the Hello timer and the Maximum Age timer together may reduce the amount of traffic on a stable network. However, the bridge processes information about changes to available paths more slowly. As a result, when a change occurs, it takes longer for the bridge to adjust. |
| Hello Time      | Controls the frequency at which the switch sends a BPDU or “hello” packet.<br>The default value is <b>2 seconds</b> . (This causes the switch to broadcast a BPDU packet every two seconds.)<br>The range of permitted values is between 1 and 10 seconds.<br>Increasing the value of the Hello timer may reduce the number of BPDU packets transmitted on the network and may make the network less responsive to change.                                                                                                                                                                                                                  |



| Setting         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Forward Delay   | <p>Controls the number of seconds a bridge must wait before it changes a link from a listening to a learning state and before it changes the link from a learning to a forwarding state.</p> <p>The default value is <b>15</b> seconds. (This means that after a link [or the entire switch] goes down and connectivity is re-established, the switch waits twice the amount of the Forward Delay time before it begins to forward traffic again.</p> <p>The range of permitted values is between 4 and 30 seconds.</p> <p><b>Note:</b> A shorter Forward Delay value enables the switch to recover a link more quickly but may reduce overall network stability. A longer Forward Delay value may prevent the switch from bringing up an unstable link. An unstable link can threaten overall network stability because each time the link changes between forwarding and non-forwarding states, the entire Spanning Tree topology must be recalculated.</p> |
| Storm Threshold | <p>The threshold for detecting the BC* storm in the network.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Storm Duration  | <p>Controls the amount of time the switch sees the BC/MC** traffic before it decides on the BC/MC storm.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

\*BC = Broadcast

\*\*MC= Multicast

### Configuring Switch Priority

To configure switch priority:

- 1** Open the Spanning Tree Configuration Menu by typing **s** in the Configuration Menu.
- 2** Type **p** in the Spanning Tree Configuration Menu.
- 3** Enter the switch priority value.

▲ **Important:** The lower the number, the more likely it is that the switch will be the Root Bridge. See Table 7-1 on page 7-5 for more information.

**4** Press **Return**  
The switch priority is changed.

### Configuring Timers

The Spanning Tree timers — Maximum Age, Hello Time, and Forward Delay — determine the operation of the entire network because they control the way the IntraSwitch interacts with other switches and bridges.

Before changing any of these timers' values, review the following section on timer relationships:

#### Timer Relationships

The timer values are related to each other, as expressed by the following formula (where the time unit is in seconds):

$$2 \times (\text{Forward Delay} - 1) \geq \text{MaxAge} \geq 2 \times (\text{Hello Time} + 1)$$

This means the following:

The value of the Maximum Age timer must not be more than twice the value of the Forward Delay timer.

The value of the Maximum Age timer must be at least twice the value of the Hello timer.

Increasing the length of these timers makes the switch less sensitive and more stable. When links or entire switches change states between forwarding and non-forwarding states, this affects the topology of the entire network.

### Configuring Maximum Age

- 1** Type **a** in the Spanning Tree Configuration Menu.
- 2** Enter a value for the Maximum Age timer at the prompt.
  - ▲ **Important!** This value must be between 6 and 40 seconds. See Table 7-1 for a description of the Maximum Age timer.
- 3** Press **Return**  
The Maximum Age is changed.

### Configuring Hello Time

- 1** Type **h** in the Spanning Tree Parameters Menu.
- 2** Enter a value for the Hello Time at the prompt.
  - ▲ **Important!** This value must be between 1 and 10 seconds. See Table 7-1 for a description of the Hello Time.
- 3** Press **Return**  
The Hello Time is changed.

### Configuring Forward Delay

- 1** Type **w** from the Spanning Tree Parameters Menu.
- 2** Type a value for the Forwarding Delay timer at the prompt.

- ▲ **Important!** This value must be between 4 and 30 seconds. See Table 7-1 for a description of the Forward Delay timer.

**3 Press Return**

The Forward Delay time is changed.

### Setting Storm Detection Threshold

The IntraSwitch can detect the broadcast or multicast storm occurrence on the network in order to prevent disaster from temporary data loop. The threshold of the detection is the number of broadcast and multicast packets detected per second. To set the threshold:

- 1** Open the **Spanning Tree Configuration Menu** by typing **s** in the Configuration Menu.
- 2** Type **s** to set the Storm Threshold.
- 3** Enter the new threshold value in the specified range.
- 4** Press **Return**. The Storm Threshold is changed and is displayed at the top of the screen next to "**Storm Threshold**

### Setting Storm Duration

The IntraSwitch can detect broadcast or multicast storm occurrence on the network, based upon storm duration time. To set the storm duration:

- 1** Open the **Spanning Tree Configuration Menu** by typing **s** in the Configuration Menu.
- 2** Type **u** to set the Storm Duration.
- 3** Enter the value in the specified range.
- 4** Press **Return**. The Storm Duration is changed and displayed at the top next to Storm Duration.

# Configuring STP Port Parameters

The Spanning Tree Port Configuration Menu allows you to configure and manage the STP parameters of each port on the IntraSwitch.

▲ **Important!** You should NOT configure any STP port parameters unless you have experience with the IEEE 802.1d specification.

To configure the STP Port Parameters:

- 1 Type **c** in the Spanning Tree Configuration Menu.

The STP Port Configuration Menu appears, similar to Figure 7-2.

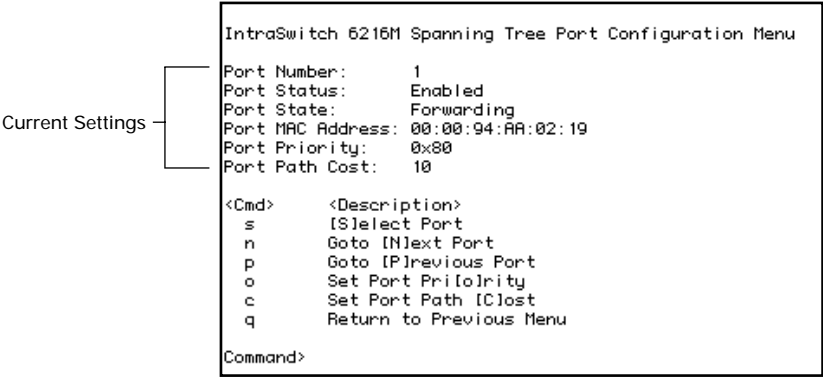


Figure 7-2 Spanning Tree Port Configuration Menu

- 2 Type **s** to select a port number.
- 3 Type **o** to set the port priority value for the port.
- 4 Enter the port priority value, then press **Return**

△ **Note:** See Table on page 7-11 for a description of port priority.

**5** Type **c** to set the port path cost.

**6** Enter the port path cost, then press **Return**  
The STP port parameters are configured.

Table 7-2 Spanning Tree Port Configuration Menu Settings

| Setting          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Port Number      | The number of the port for which information is displayed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Port Status      | The status of the port.<br><b>Enabled</b> — the port is enabled and can receive and forward packets.<br><b>Disabled</b> — the port is disabled.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Port State       | The current state of the port.<br><b>Disabled</b> — the port is disabled and cannot forward packets; it does not participate in STP operation.<br><b>Listening</b> — the port is preparing to forward packets but has been temporarily blocked to prevent loop. During the Listening state, BPDUs are transmitted, received, and processed. The port is included in STP calculations.<br><b>Blocking</b> — the port is not forwarding packets in order to prevent more than one active path on the network. The port is included in STP calculations, and BPDUs can be received, and processed.<br><b>Learning</b> — the port is preparing to forward packets but has been temporarily blocked to prevent a loop. During this state the switch learns the addresses of all error-free packets. The port is included in STP calculations and BPDUs can be transmitted, received, and processed.<br><b>Forwarding</b> — the port is able to forward received packets. BPDUs can also be transmitted, received, and processed. |
| Port MAC Address | The MAC address of the device connected to the port.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Port Priority    | The priority of the port. By changing the priority, you can make the port more or less likely to become the <b>Root Port</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Port Path Cost   | The cost factor assigned to the port. The lower the assigned port cost, the more likely the port is to be accessed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |



# Web Browser Management

This chapter describes how to manage the IntraSwitch 6216M and 6224 via a World Wide Web browser.

This chapter contains the following sections:

- ❑ Overview
- ❑ Accessing with a Web Browser
- ❑ Management Buttons
  - ❑ Overview
  - ❑ General Information
  - ❑ Statistics
  - ❑ Port Configuration
  - ❑ Spanning Tree
  - ❑ SNMP
  - ❑ Download Image
  - ❑ Tech Support



# Web Browser Management

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## Overview

The IntraSwitch 6216M and 6224 each have a built-in HTTP server which allows you to access management features via any standard World Wide Web browser.

By accessing the HTTP server, you can easily view current IntraSwitch status at a glance, administrative information, port parameters, and management statistics. You can also conveniently download the latest software version from the Asanté FTP site.

## Web Browser Management

Any networked computer with a supported Web browser can access, configure, and manage the IntraSwitch and any installed expansion modules. This provides easy-to-use management capabilities without the need for additional management software.

## SNMP-Based Management

The SNMP (Simple Network Management Protocol) is used to manage the IntraSwitch and any installed expansion module. The SNMP agent supports database objects that are defined in the following management information bases (MIBs):

- ☐ MIB II (RFC 1213)
- ☐ Bridge MIB (RFC 1493)
- ☐ RMON (RFC 1757) 1 group
- ☐ Private IntraSwitch MIB

Any SNMP-based network management application, such as Web-based management software, can be used to manage the IntraSwitch. See “SNMP-Based Management Software” in Chapter 4 for more information.

This section explains how to access the HTTP server and view the management features it offers.

## Accessing with a Web Browser

To use Web browser management, the IntraSwitch must be configured with an IP address. See “Configuring for Management” in Chapter 2 for instructions.

- 1** Locate a computer with a functioning World Wide Web browser and open the browser.
- 2** Type the Switch IP address at the URL prompt.
- 3** Enter user name **IntraSwitch** and a password. The default password is **Asante**
- 4** Press **Return**. The Switch Web Browser Management Overview Page appears, as shown in Figure 8-1.

△ **Note:** The browser screens shown in this chapter are typical of those used for the IntraSwitch and settings are given only as examples. The user must configure the IntraSwitch with parameters that are specific to the user's application and site requirements.

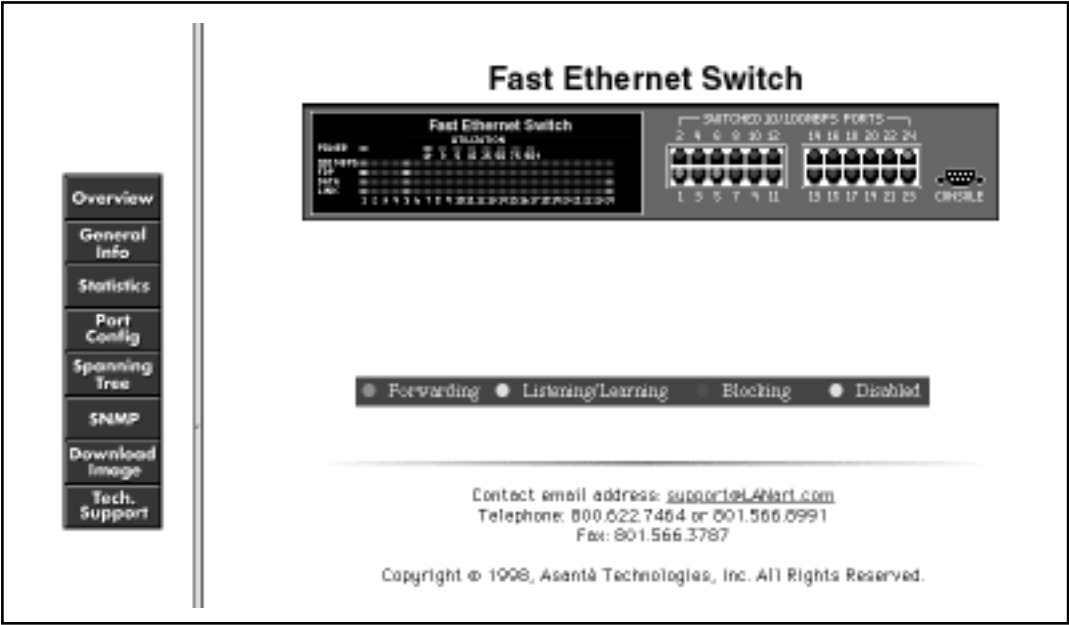


Figure 8-1 Web Browser Management Page

The Switch Web Browser Management Page contains a sidebar with eight option buttons and a view of the IntraSwitch front panel that displays real-time IntraSwitch operating information. A bar with four legends that represent port states is shown below the panel

### Management buttons

The Sidebar buttons present eight options as follows:

☐ **Overview**

Opens (or refreshes) the Switch Web Browser Management Page. This is the top-level or opening screen.

❑ Front panel display

The front panel graphic displays the image of the connected switch, its LED panel, and the active data ports.

The front panel LED display simulates the IntraSwitch in real-time operating mode. It approximates all switch activity as it occurs.

❑ Legend bar

This is a bar which is located below the simulated IntraSwitch panel. It describes individual port activity indicated by the use of colored lights within the port connector. These lights indicate SpanningTree state (i.e., forwarding, blocking, etc.) of the individual switched port as long as link is established. If activity is occurring on the port, the bar will display its current usage as follows:

- **Forwarding** This is a green LED which indicates forwarding activity on the selected port.
- **Listening/Learning** This is a yellow LED which indicates an intermediate SpanningTree Mode prior to a forwarding or blocking decision. See Table 7-2.
- **Blocking** This is a red LED which indicates that the port has detected a data loop and is no longer switching packets.
- **Disabled** This is a blue LED which indicates that the port has been disabled.

❑ **Port Selector Feature**

By pointing to a port and clicking the mouse, another screen is displayed which shows the selected port configuration and traffic statistics. See Figure 8-2.

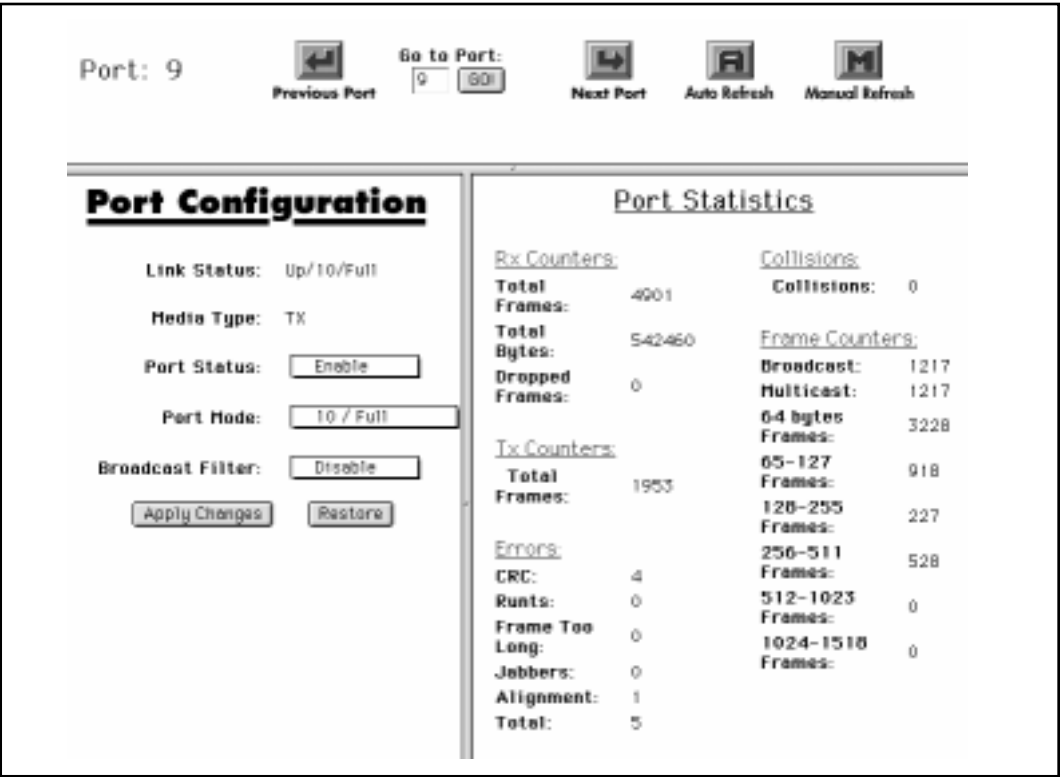


Figure 8-2 Port Selector Screen

### ❑ General Info Screen

Opens the Switch General Information Screen. This button brings up seven sub-levels as shown in Figure 8-3 below. All General Information functions are described in Chapter 6, Table 6-1.

[Software Version](#)[Switch Address](#)[Security Configuration](#)[Administrative Information](#)[Bootstrap Information](#)[System Clock](#)[System Information](#)

## General Information

### Software Version:

|                             |                                    |
|-----------------------------|------------------------------------|
| Running Image Version/Date: | 1.00 / Jul 29 1998 16:18:22        |
| Bank 1 Image Version/Date:  | 1.00 / Jul 29 1998 16:18:22        |
| Bank 2 Image Version/Date:  | 1.00 / Jul 29 1998 16:18:22 (Boot) |

### Administrative Information:

|                  |                                            |
|------------------|--------------------------------------------|
| Switch Name:     | <input type="text" value="6216M or 6224"/> |
| Switch Location: | <input type="text" value="office"/>        |
| Switch Contact:  | <input type="text" value="Asante"/>        |

### System Information:

|              |       |
|--------------|-------|
| DRAM Size:   | 4MB   |
| Flash Size:  | 1.5MB |
| EEPROM Size: | 32KB  |

Figure 8-3 General Information Screen

Switch Address:

MAC Address:

00:00:94:AA:00:E0

IP Address:

139.192.82.06

Subnet Mask:

139.139.139.0

Router:

139.192.82.6

Apply Changes

Restore

Bootstrap Information:

Server IP:

635.357.18.1

Boot File Name:

c:\filename\prog.tms

Boot Mode:

TFTP only

Load Mode:

Local

Boot Bank:

2

Apply Changes

Restore

Security Configuration:

Duplicate IP Trap:

Enable

MAC Ageout Time:

15

sec

Apply Changes

Restore

System Clock:

Elapsed time since system up:

0:00:00:56

[ddhh:mm:ss]

Figure 8-3     General Information Screen (Continued)

Page 8-8

### ❑ Statistics Screen

The Statistics Screen presents a graphical image of the switch statistics as shown in Figure 8-4. From this screen, the user can view system statistics for all runtime since the last system reset. See Table 6-3 for a description of the statistics counters.

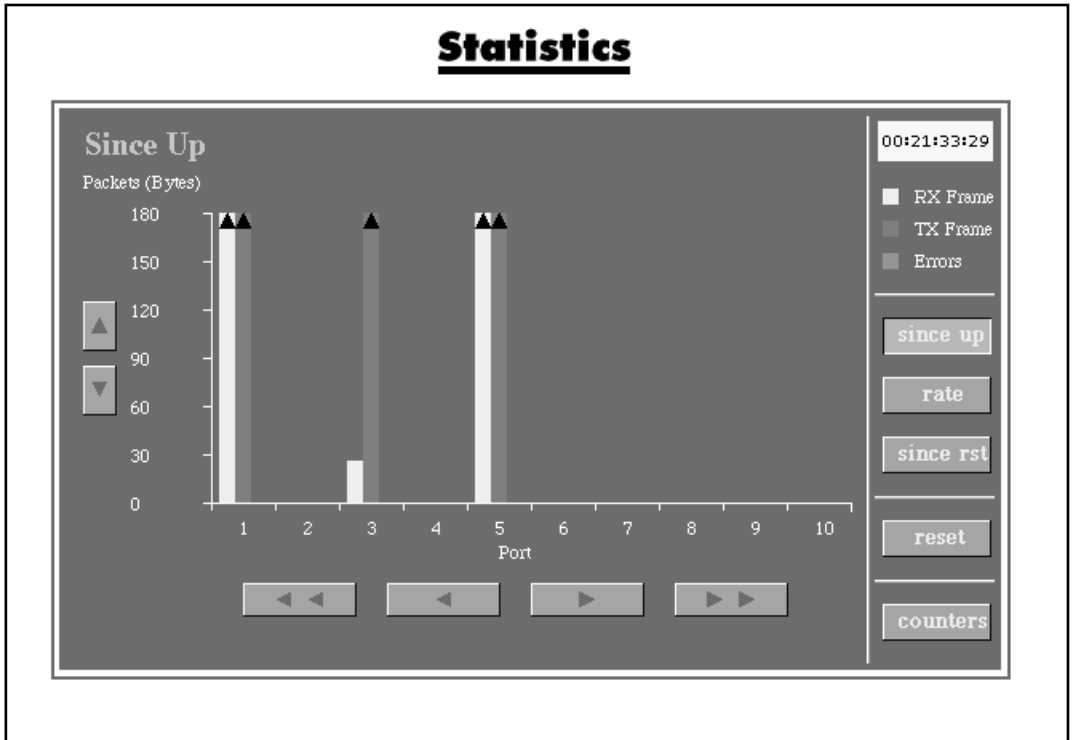


Figure 8-4 Statistics Screen

### ❑ Up-Down Arrows

The left most up and down arrows allow you to scroll the screen upwards to view the counter graph, where the system has been up for some duration of time and the counters have run off the screen.



- ❑ Since Up Button

The "Since Up" button allows you to view the graph of the total packets/bytes switched on the ports since the switch was last reset/or powered on.

- ❑ Rate Button

The "Rate" button displays the rate of the packet or bytes per ports

- ❑ Since Reset

The "Since Rst" button displays the packets/ bytes switched since the management counters were last reset/ cleared.

- ❑ Reset

The "reset" button clears the current counters.

- ❑ Counters Button

The "counters" button displays the Statistical counters of the associated view, since up or since reset.

△ **Note:** You may also view the summary of the packets and bytes per port by dragging your pointer across the desired bar graph. You may enter the statistics mode for the related ports by single clicking on the bar itself.

### ❑ Statistics Counters Screen

The Statistics Counters Screen presents a graphical image of Switch Counters, as shown in Figure 8-5.

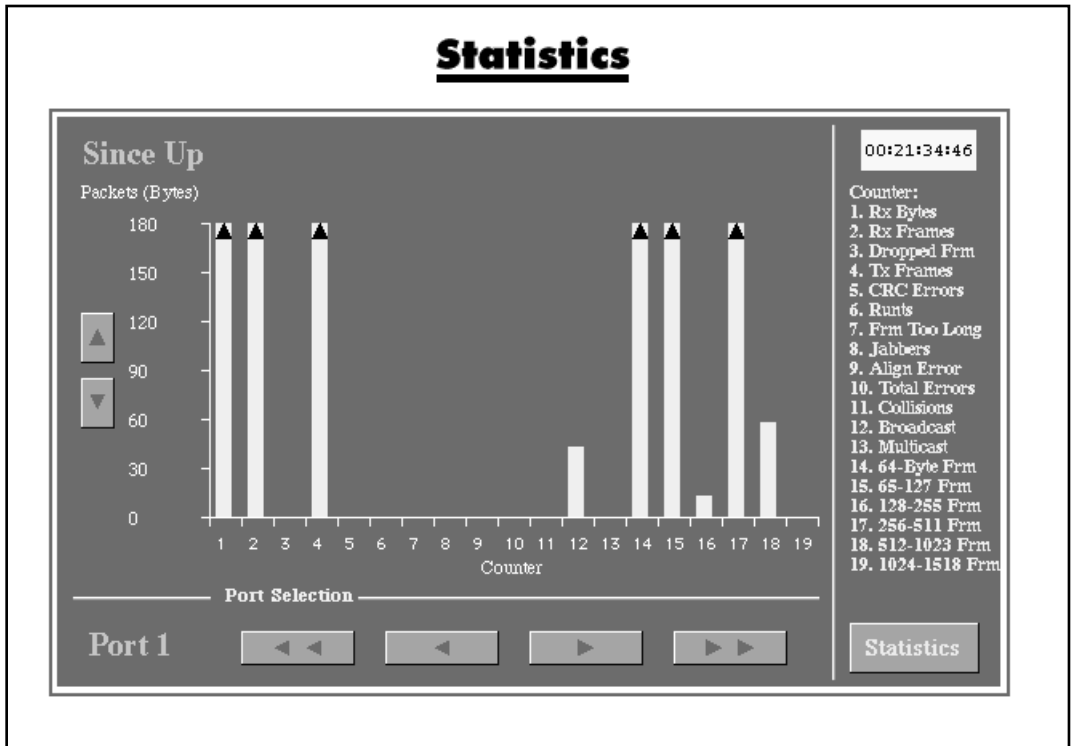


Figure 8-5 Statistics Counters Screen

❑ **Port Configuration Screen**

The Port Configuration Screen provides a comprehensive overview of the status of each port on the screen. The configuration page for any individual port can be accessed by single clicking on the associated blue number in the right or left hand margin.

Refer to Figure 8-6.

- ❑ Inactive ports are listed in black font
- ❑ Full duplex ports are listed in green font
- ❑ Half duplex ports are listed in blue font

For more information, see Port Configuration in Chapter 5.

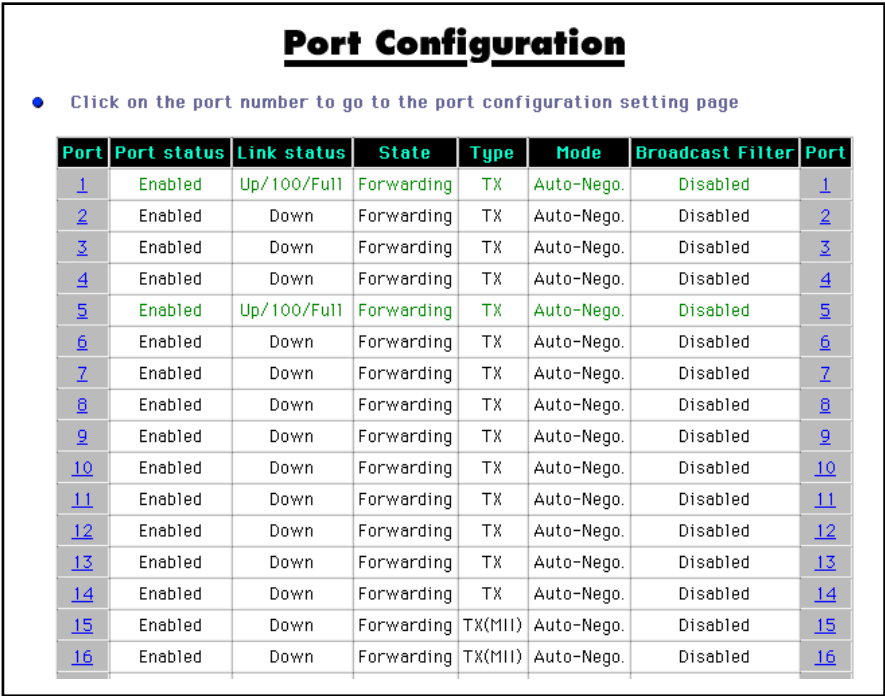


Figure 8-6 Port Configuration Screen

❑ **Spanning Tree Screen**

The Spanning Tree Protocol Configuration Screen shows the STP Configuration. See Figure Figure 8-7. STP is described in Chapter 7, Advanced Management.

### Spanning Tree Protocol Configuration

|                        |                   |
|------------------------|-------------------|
| Bridge ID:             | 8000 0000948EF330 |
| Designated Root:       | 4000 000094933740 |
| Root Port:             | 24                |
| Root Path Cost:        | 100               |
| Hello Time: 2 Sec.     |                   |
| Maximum Age: 20 Sec.   |                   |
| Forward Delay: 15 Sec. |                   |

STP Port Configuration

Global STP Status:

Bridge Priority:  (0-65535)

Bridge Hello Time:  (1-10)Sec.

Bridge Maximum Age:  (6-40)Sec.

Bridge Forward Delay:  (4-30)Sec.

Figure 8-7 Spanning Tree Protocol Configuration

❑ **STP Port Configuration Screen**

The STP Port Configuration Screen displays port status and parameters. This screen may be accessed by clicking the STP Port Configuration button on the Scanning Tree Protocol Configuration Screen. You can modify the STP configuration of each individual port at this screen. See Figure 8-8.

STP Port Configuration

| Port | Status     | MAC Address       | Priority | Path Cost | Apply Changes |    |
|------|------------|-------------------|----------|-----------|---------------|----|
| 1    | Forwarding | 00:00:94:8E:F3:31 | 128      | 10        | Yes           | No |
| 2    | Forwarding | 00:00:94:8E:F3:32 | 128      | 10        | Yes           | No |
| 3    | Forwarding | 00:00:94:8E:F3:33 | 128      | 100       | Yes           | No |
| 4    | Forwarding | 00:00:94:8E:F3:34 | 128      | 10        | Yes           | No |
| 5    | Forwarding | 00:00:94:8E:F3:35 | 128      | 10        | Yes           | No |
| 6    | Forwarding | 00:00:94:8E:F3:36 | 128      | 100       | Yes           | No |
| 7    | Forwarding | 00:00:94:8E:F3:37 | 128      | 100       | Yes           | No |
| 8    | Forwarding | 00:00:94:8E:F3:38 | 128      | 100       | Yes           | No |
| 9    | Forwarding | 00:00:94:8E:F3:39 | 128      | 100       | Yes           | No |
| 10   | Forwarding | 00:00:94:8E:F3:3A | 128      | 100       | Yes           | No |
| 11   | Forwarding | 00:00:94:8E:F3:3B | 128      | 100       | Yes           | No |
| 12   | Forwarding | 00:00:94:8E:F3:3C | 128      | 10        | Yes           | No |
| 13   | Forwarding | 00:00:94:8E:F3:3D | 128      | 100       | Yes           | No |
| 14   | Forwarding | 00:00:94:8E:F3:3E | 128      | 100       | Yes           | No |
| Port | Status     | MAC Address       | Priority | Path Cost | Apply Changes |    |

Figure 8-8 STP Port Configuration

❑ **SNMP Configuration Screen**

The SNMP (Simple Network Management Protocol), Figure 8-9, allows access to the SNMP configuration parameters. See Chapter 5, Table 5-7 for an explanation of settings.

▲ **Important!** You should NOT configure any STP parameters unless you have knowledge and experience with the IEEE 802.1d specification.

### SNMP Configuration

SNMP Read Community:

public

SNMP Write Community:

private

Trap Authentication:

Disable

#### SNMP Trap Receivers:

|    | IP Address     | Community |
|----|----------------|-----------|
| 1. | 635.35.71.86   | private   |
| 2. | 139.192.82.061 | private   |
| 3. |                |           |
| 4. |                |           |

Apply Changes

Restore

Figure 8-9 SNMP Configuration Screen

❑ **Downloading Image File Screen**

The Downloading Image File Screen, Figure 8-10, shows current settings and allows the user to download image files. See Chapter 5 for an explanation of configuration and settings.

**Downloading Image File**

Bank 1 Image Version/Date:

1.00 /Jul 29 1998 16:18:22

Bank 2 Image Version/Date:

1.00 /Jul 29 1998 16:18:22 (Boot)

Protocol:

TFTP

Image Server IP:

139.192.82.061

Image File Name:

filename.img

Retry Count:

5

Destination Bank:

1

Reboot System:

No

Download

Restore

Refresh

Figure 8-10    Downloading Image File

❑ **Download Image File**

To simply download and reset the switch (using only this Web management interface) follow the steps below.

- 1

Go to the Tech Support button on the Overview page of the Web Management screen.
- 2

Locate and select the Asanté FTP Site Internet host.

- 3 Search the FTP site for an IntraSwitch 6216M or 6224 folder.
- 4 Check for a new version of the image code for your device.
- 5 If a new version exists, download it to a local TFTP server.
- 6 Re-enter the Download Image File screen of the Web Management server.
- 7 Enter the TFTP server IP address and Image File name where indicated
- 8 Select the destination memory bank
- 9 Choose to Reboot system, or wait to reboot from a new bank at the desired time.
- 10 Select the download button at the bottom of the page.

☐ **Asanté Technical Support Screen**

The Tech Support Screen provides information about how to contact Asanté technical support. You may also use this screen to access the FTP site and download new IntraSwitch runtime code versions. See Figure 8-11.





Figure 8-11 Asanté Technical Support Screen

# VLAN Management

This chapter describes the IntraSwitch 6216M and 6224' VLAN options and explains how to configure the unit using those options.

This chapter contains the following sections:

- ❑ **Overview**
- ❑ **VLAN Configuration**
  - ❑ Accessing Configuration Menus
  - ❑ Using the Configuration Menu Options
  - ❑ Navigating to a VLAN Group
  - ❑ Help
  - ❑ Setting VLAN ID
  - ❑ Setting VLAN Name
  - ❑ Adding VLAN Members
  - ❑ Configuring Management VLAN
  - ❑ Displaying System VLAN Summary
  - ❑ Displaying Port VLAN Map
  - ❑ Return to Configuration Menu
- ❑ **VLAN Port Attribute Configuration**
  - ❑ Using the Port Attribute Configuration Menu Option
  - ❑ Navigating to a VLAN Port
  - ❑ Help

## VLAN Management

- ☐ Setting the Port VLAN ID
- ☐ Toggle VLAN Tagging
- ☐ Map a Port to Multiple VLAN Groups
- ☐ Adding VLANs to a Tagged Port
- ☐ Removing VLANs from a Tagged Port
- ☐ Return to Port Attributes Configuration Menu
- ☐ Example of System With Tagging
- ☐ **SNMP Management**

# VLAN Management

---

## Overview

Your IntraSwitch supports use of a Virtual LAN on all ports. A Virtual LAN, or VLAN, is a logically separated segment of your LAN. A VLAN segment is different from a standard ethernet segment; it contains a limited number of devices, whose traffic is isolated from that of the rest of the LAN. The “member” devices of each VLAN are defined by port grouping. You can use your Local Management Interface to set up a Virtual LAN and add ports to it or remove ports from it.

By default, all ports on the IntraSwitch are included in a single VLAN, VLAN 1. In this configuration, there is no separation or organization of devices into groups, so all network traffic runs on all parts of the net.

If you need to isolate a group of users who move large files over the net, or a group of users who have special security needs, create a VLAN for them as described in this chapter.

If you need to shield a group of high-priority users from background network traffic such as that caused by broadcasts or “chatty protocol” overhead traffic, you can create a VLAN for them, also.

The present version of the IntraSwitch supports port-based VLANs with manual VLAN configuration. The following are the basic VLAN features supported:

- ☐ 15 VLAN Groups (Segments)
- ☐ VLAN untagged ports (also called normal ports)
- ☐ VLAN tagged ports (also called expansion ports)
- ☐ Management VLAN
- ☐ Single STP (Spanning Tree Protocol)
- ☐ Console Management of VLANs
- ☐ SNMP based VLAN management

The subsections following the Abbreviations list below describe these features and how each is configured.

### Abbreviations

The following abbreviations are used throughout this chapter.

|           |                                             |
|-----------|---------------------------------------------|
| MGMT:     | Management.                                 |
| PVID:     | A tagged port's VLAN ID. Range is 1...4094. |
| STP:      | Spanning tree protocol.                     |
| Tagged:   | Tagging is enabled.                         |
| Untagged: | Tagging is disabled.                        |
| VID:      | VLAN group's ID. Range is 1...4094.         |

- Δ **Note:** The terms “groups” and “segments” are both used to represent VLAN segments in the system. They are numbered from 1 to 15.

### VLAN Groups

The IntraSwitch supports 15 VLAN Groups. Each of these VLAN Groups is uniquely identified by a 12-bit (1...4094) VLAN ID (VID). No two VLAN Groups can have same VID if they reside on the same switch. Stations on one VLAN Group can talk between themselves and cannot talk with stations in any other VLAN Group. By default, all ports of the system belong to VLAN Group 1 which is termed the *Default VLAN* and has a VID value of 1. *The VID of the Default VLAN cannot be changed by the user.* Each VLAN group can have one or more ports as its members.

Management operations allowed on VLAN Groups are:

- ❑ Setting VID (for VLANs other than the Default VLAN). See "Setting VLAN ID" for details
- ❑ VLAN name configuration. See "Setting VLAN Name" for details.
- ❑ Adding Port Members to a VLAN Group. See "Adding VLAN Members" for details.

### VLAN Untagged (normal) Ports

The IntraSwitch ports by default operate as *normal ports*, meaning they can transmit and receive frames as untagged or un-encapsulated frames. In the present implementation, a

normal port can belong to *only one VLAN* at a time. When a normal port belongs to a particular VLAN, all frames received at the port are classified to the VLAN of the port. The received broadcast/Multicast packets, or received Unicast packets with unknown destination, on this port, will be flooded only to ports that belong to the same VLAN as the received port. To configure a port to be a normal port, the tagging mode of the port must be Disabled. See "Toggle VLAN Tagging" for details on configuring a normal port.

### VLAN Tagged (Expansion) Ports

Any port of the IntraSwitch can act as a *tagged port* (expansion port). You can connect two compatible IntraSwitches via tagged ports and thus communicate between VLANs on the two switches. To make a port a tagged port, its tagging mode must be Enabled. Frames transmitted on a tagged port carry the VLAN ID in their tag field and frames received on a tagged port are classified based on the VLAN ID in the frame's tag field. *A tagged port must be connected to another tagged port only* since all un-tagged frames on the tagged port are filtered. All received unknown unicast and broadcast/multicast frames on a tagged port are flooded to ports belonging to the VLAN to which the received frames are classified.

See "Toggle VLAN Tagging" for details on enabling a tagged port and "Overview: Using tagging to connect VLANs" for details on mapping a tagged port to more than one VLAN.

*The purpose of a tagged port is to provide connectivity between two or more IntraSwitches such that they share some or all of the system VLAN information between them.* A graphic example is shown in Figure 9-3.

▲ **Important!** The tagged port feature can only be used to connect two Asanté Switches.

### Management VLANs

The IntraSwitch system supports access security for switch management. By default, switch management is not affected by its VLAN configuration, meaning the switch can be accessed in any of the VLANs. Once management access is enabled for a particular VLAN, called the *management VLAN*, the switch can be managed only on interfaces belonging to the management VLAN(s). This essentially means that the Telnet, HTTP and SNMP operations for the switch will be successful only on interfaces belonging to management VLAN. *Management VLAN security does not affect console management*, though. See "Configuring Management VLAN" for details on configuring the management VLAN.

- △ **Note:** Management Access can be enabled for more than one VLAN at a time. By default, Management Access is enabled for all VLANs.

▲ **Important:** When configuring VLAN management in-band, if you disable management access to your own VLAN, you will have to move to a different VLAN port or to the console in order to further configure the device.

### Spanning Tree Protocol in VLAN environment

The IntraSwitch system supports single Spanning Tree Protocol (STP) in the multi VLAN environment. STP operates the same way as when the system has no VLAN configuration. As far as STP BPDU (Bridge Protocol Data Unit) packets are concerned, management does not worry about which VLAN the BPDU is received or transmitted from. As a consequence, the data loop involving ports belonging to multiple VLANs will be cut as one or more ports involved in the data loop will be put in *Block* state.

- △ **Note:** You cannot create switched links between VLANs by patching two ports of the same switch together. This will create an STP loop which will disable one of the ports.

VLAN Management Interface Options

The IntraSwitch VLAN configuration can be achieved through either Console/Telnet operation or SNMP operation. Web based management will be available soon. The following section describes VLAN configuration by means of Console/Telnet interface.

VLAN Configuration

This section explains how to configure your IntraSwitch for VLAN use after you have connected to Local Management Interface using either an out-of-band Console or in-band Telnet connection. When you first make this connection, the default VLAN settings will be as shown in Table 9-1. To change these settings, use the procedures that follow.

Table 9-1      System VLAN Default Settings

| VLAN Group # | Port Members       | VID  | MGMT Access |
|--------------|--------------------|------|-------------|
| 1            | All ports untagged | 0001 | Enabled     |
| 2            | No Ports           | 0002 | Enabled     |
| 3            | No Ports           | 0003 | Enabled     |
| 4            | No Ports           | 0004 | Enabled     |
| 5            | No Ports           | 0005 | Enabled     |
| 6            | No Ports           | 0006 | Enabled     |
| 7            | No Ports           | 0007 | Enabled     |
| 8            | No Ports           | 0008 | Enabled     |
| 9            | No Ports           | 0009 | Enabled     |
| 10           | No Ports           | 0010 | Enabled     |
| 11           | No Ports           | 0011 | Enabled     |



| VLAN Group # | Port Members | VID  | MGMT Access |
|--------------|--------------|------|-------------|
| 12           | No Ports     | 0012 | Enabled     |
| 13           | No Ports     | 0013 | Enabled     |
| 14           | No Ports     | 0014 | Enabled     |
| 15           | No ports     | 0015 | Enabled     |

**Accessing  
Configuration  
Menus**

The console/telnet interface provides user friendly VLAN configuration menus. To access these menus from the Main Menu of Local Management Interface, type **c** and enter your password at the prompt. The Configuration Menu is displayed. In this menu, type **v** to display the VLAN Configuration Menu, as shown in Figure 9-1.

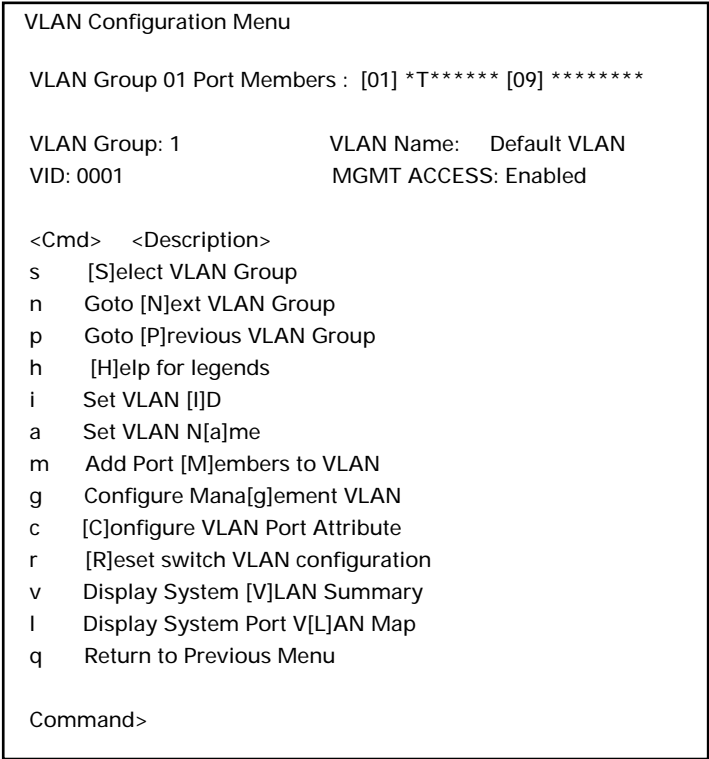


Figure 9-1    VLAN Configuration Screen

Current Settings

At the top of the Configuration Screen, the current settings are displayed. Descriptions of these settings are shown in Table 9-2.

Table 9-2 VLAN Group Current Settings

| Setting                             | Description                                                                                                                                                                                                                                         |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VLAN Group xx Port Members Settings | Untagged ports which are members of this VLAN Group are represented as *. Tagged member ports of this VLAN Group are represented as T and non-member ports are represented as -. The values [01] and [09] mean starting port numbers at that point. |
| VLAN Group                          | This represents the VLAN Group number; a value between 1 and 15. This value cannot be changed by the user.                                                                                                                                          |
| VLAN Name                           | Represents the current name of the VLAN Group. If the user has not configured a name for a VLAN Group, the display shows <null> next to this field. It accepts the first 32 characters given by the user.                                           |
| VID                                 | This field represents the current VID of the VLAN Group. The user can set this value in the range 2 - 4094.<br><i>Note: User cannot change the VID of the Default VLAN, which by default is equal to 1.</i>                                         |
| MGMT Access                         | This field indicates if Switch Management can be accessed in this VLAN Group or not.                                                                                                                                                                |

Using the Configuration Menu Options

The following subsections describe how to use the options of the configuration menu to navigate to the desired group, set the VID, set VLAN Name, add VLAN members, configure the management VLAN, and display VLAN information. For details on configuring VLAN port attributes (option **c**) see “VLAN Port Attribute Configuration” later in this chapter.

Navigating to a VLAN Group

The options **s**, **n**, and **p** take the user to the desired VLAN Group. Use them to **s**elect a group, move to the **n**ext group, or move to the **p**revious group.

Help

The option **h** displays VLAN Legend information.

## Setting VLAN ID

To assign a VLAN ID number for a VLAN Group, press **i** in the VLAN configuration Menu.

Selecting **i** for the Default VLAN Group, displays a warning message:

```
Cannot change VID of default VLAN,
press any key to continue.
```

For VLAN Groups between 2 and 15, pressing **i** displays the message:

```
Enter VLAN ID (2 - 4094) >
```

Enter a value within the specified range and press **return**. This changes the VID of VLAN Group to the requested value.

## Setting VLAN Name

To assign a VLAN Name, press **a** on the VLAN Configuration Menu. This displays the prompt:

```
Enter VLAN Name (max. 32 Chars) >
```

Enter the desired name and press **return**. The VLAN Name is now changed to the requested string.

## Adding VLAN Members

To add members to a particular VLAN Group, take the following steps.

- 1 Type **m** on the Configuration Menu. This displays the prompt:  
Enter port numbers separated by space >
- 2 Enter the ports you wish to add to the VLAN, separating the entries with spaces.
- 3 Press **return**

Now the user requested ports are added to the member set of the VLAN Group and each is displayed as \* in the position of the port.

Δ **Note:** When this operation is carried out for normal ports, the ports are moved from their original VLAN Group to the new VLAN Group.

When the port involved is a Tagged port, the port's original VLAN Group membership is not revoked.

### Configuring Management VLAN

Take the following steps to configure a management VLAN.

- 1** Type **g** on the VLAN configuration Menu. This displays the prompt:  
Enter VLAN Groups separated by space  
(0 means ALL) >
- 2** Type **0** to make management belong to all VLANs in the system or enter specific **VLAN Group numbers** following each by a space.
- 3** Press **return**. This displays a confirmation message.
- 4** Type **y** to accept and **n** to cancel the operation.

If **y** was selected, the management VLAN will be changed according to the request. The changes are reflected on the screen next to the field **MGMT Access** in each VLAN Group screen.

Δ **Note:** The VID, VLAN Name, VLAN Members and MGMT ACCESS information are stored in a Non-Volatile Database so you do not have to re-configure them each time the system starts.

### Displaying System VLAN Summary

To display the system VLAN summary, press **v** in the VLAN Configuration Menu. This brings up the screen which shows all VLAN Groups and their member information. The VID of each VLAN Group and switch management accessibility information are also displayed on this screen.

### Displaying Port VLAN Map

To display a summary of the system's port VLAN association, press **l** in the VLAN Configuration Menu. This brings up the screen which shows all Ports and their VLAN Group association information.

Δ **Note:** The Port VID field on the "system Port VLAN Map" screen represents the port's VID when untagged. When tagged, the port's VID has no significance and is displayed as "----".

Return to Configura-  
tion Menu

Press **q** on the VLAN Configuration menu to return to the overall Configuration menu for the switch.

VLAN Port  
Attribute  
Configuration

This section explains how to configure VLAN attributes for individual ports of your IntraSwitch using either an out-of-band Console or in-band Telnet connection.

To configure these attributes, access the VLAN Configuration Menu as described in the previous section, then type **c** to display the VLAN Port Attribute Configuration Menu as shown in Figure 9-2.

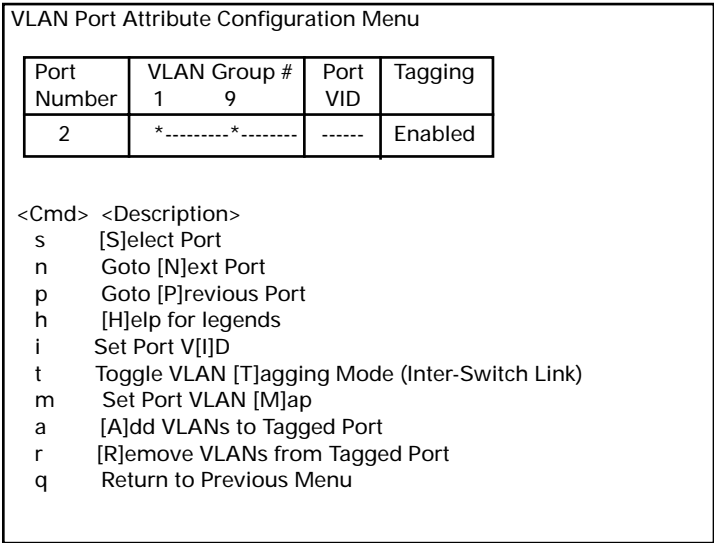


Figure 9-2 VLAN Port Attribute Configuration Screen

Current Settings

At the top of the Configuration Screen, the current settings are displayed. Descriptions of these settings are shown in Table 9-3.

Table 9-3      Current Settings of Port Attributes

| Setting                                                                 | Description                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Port Number                                                             | Port number of the selected port.                                                                                                                                                                                                                      |
| Port VLAN Membership<br>(Column 2 below<br>VLAN Group #<br>information) | This field represents port VLAN association. A "*" under VLAN Group # signifies that the port is a member of that VLAN. A "-" means that this port is not a member of that VLAN Group #.                                                               |
| Port VID                                                                | VID of the VLAN to which this port is a member when it is not tagged.<br><b>Note:</b> When Tagged, port VID does not have any significance and hence is displayed as "----". When untagged, a value in the range 1 - 4094 is displayed for this field. |
| Tagging                                                                 | This field represents the current port Tagging mode, i.e., tagging enabled/disabled information.<br><b>Note:</b> When Tagging is enabled, Port VID is displayed as "----".                                                                             |

Using the Port  
Attribute Configura-  
tion Menu Options

The following subsections describe how to use the options of the Port Attribute Configuration Menu to navigate to the desired group, set port VID, toggle VLAN tagging, map a port to multiple VLAN groups, add VLANs to a tagged port, and remove VLANs from a tagged port.

Navigating to a  
VLAN Port

The options **s**, **n**, and **p** take the user to desired port. Use them to **s**elect a port, move to the **n**ext port, or move to the **p**revious port.

Help

The option **h** displays the legend information for the port VLAN attributes.

### Setting the Port VLAN ID

You can assign a port VID of any value in the range of 1 - 4094. When the port VID is equal to the VID of one of the VLAN Groups in the system, the port becomes a member of that VLAN Group. If the given port VID value does not match with the VID of any VLAN Group in the system, an error message is displayed:

Invalid port VID, press any key to continue

To assign a port VID, press **i** in VLAN Port Attribute Configuration Menu. This displays the message:

Enter Port VID (1 - 4094) >

Enter a value within the range and press **return**

If the *given value does not match* with the VID of any VLAN Groups in the system, a warning message is displayed:

Invalid Port VID, press any key to continue

If the given value is a value of one the existing VIDs, then the port VID (PVID) is set with the value, and the screen changes to the VLAN Port attribute screen of the corresponding VLAN Group, with the port number equal to the current port number. The port is now displayed as a \* in the VLAN Group's member set.

- Δ **Note:** Since the port VID does not have any significance for a tagged port, setting port VID is not available for tagged ports.

### Toggle VLAN Tagging

This option, **t** in the VLAN Port Attribute Configuration Menu, is used to create a tagged port or expansion port. The purpose of a tagged port is to open a line of communication between VLANs on two or more compatible IntraSwitches. Before you enable tagging, read the following overview, then refer to the example shown in Figure 9-3.

### Overview: Using tagging to connect VLANs

Use the following procedure to connect two IntraSwitches so that users on a VLAN defined in one switch can communicate with users on a matching VLAN defined on the other switch.



- 1** Make the correct cable connection between the two switches.
- 2** Create matching VLANs on the two switches. Use the **a** option, the **i** option, and the **m** option in the VLAN Configuration Menu to assign names, ID numbers, and member ports to the VLANs.
  - ▲ Important! The VLID numbers for the VLANs must be identical on the two switches, or communication will not be possible between the matching VLANs.**
- 3** Select a port for tagging (an expansion port) on each switch and enable tagging, as explained in this section.
- 4** Assign the VLANs to the tagged port on each switch, as explained in "Map a Port to Multiple VLAN Groups" For an example of a tagged port connecting VLANs on two switches, see Figure 9-3.

To toggle VLAN tagging of a port, press **t** in VLAN Port Attribute Configuration Menu. This changes the VLAN tagging mode for the port from Disabled to Enabled or vice versa.

If the toggle operation is to enable tagging, then the user is prompted with the following message:

```
The other end of this port must also be tagged.  
Press y to enable tagging and n to cancel the  
operation: >
```

Press **y** to confirm the enabling of tagging for the port.

If the toggle operation is to disable tagging, the following message appears:

```
Enter Port VID (1 - 4095) >
```

Enter the VID of the VLAN to which this port is associated and press **return** if no value is given or if the given value is an invalid VLAN ID, port tagging is not disabled and the following message is displayed:

```
Tagging NOT Disabled, press any key to continue
```

- Δ **Note:** Port VID and Tagging information are stored in a Non-Volatile Data Base, so you do not have to configure them each time the system starts up.

### Map a Port to Multiple VLAN Groups

This option is mainly available for making a port belong to multiple VLAN Groups. But this option can also be used instead of the "Set Port VID" option to make a port belong to a VLAN Group. When used for port-to-multi-VLAN Group mapping, this option gives a warning message if port tagging is disabled.

To make a port belong to one or more VLAN Groups, press **m** in VLAN Port Attribute Configuration Menu. The following message appears:

```
Enter VLAN Group #s separated by spaces (0  
means ALL) >
```

If you want to make a port belong to *only one* VLAN Group, enter the corresponding VLAN Group number next to the prompt and press **return**. The port is now made a member of the desired VLAN Group and the screen shows the changed configuration.

If you want to make a port belong to *more than one* VLAN Group, enter the corresponding VLAN Group numbers, separated by spaces, and press **return** if port tagging is enabled, then the port is made a member of the desired VLAN Groups and the changes are shown on the screen. If the value given is 0, then the port is made a member of all VLAN Groups in the system.

If tagging for the port is disabled, then the following warning message appears on the screen:

```
Normal port can't belong to more than one VLAN.  
Enable Tagging first, press any key to continue...
```

See the "Toggle VLAN Tagging" section above for details on enabling tagging for a port.

### Adding VLANs to a Tagged Port

You can make a tagged port a member of more than one VLAN Group at a time. Use option **a** for this purpose. The difference between this and option **m** is that, while **m** option overwrites the existing map, the **a** option adds to the existing map. To add VLANs to a tagged port, press **a** in VLAN Port Attribute Configuration Menu. The following message appears:

```
Enter VLAN Group #s separated by space >
```

Enter the VLAN Group numbers, separated by spaces, at the prompt and press **return**

- △ **Note:** Option **a** is specific to tagged ports only.  
If option **a** is selected for a normal port, a warning message appears:

```
Cannot add VLANs to Normal Port,  
Press any key to continue
```

### Removing VLANs from a Tagged Port

VLANs may be removed from a tagged port. This option is provided to make your life easier when you want to remove one or more of many VLANs of which the tagged port is a member. To remove VLANs from a tagged port, press **r** in VLAN Port Attribute Configuration Menu. This displays the following message:

```
Enter VLAN Group #s separated space >
```

Enter VLAN Group numbers, separated by spaces, and press **return**. This removes requested VLANs from the tagged port.

- Δ **Note:** The option **r** is allowed only for tagged ports since, for a normal port, the VLAN cannot be removed. The port has to be a member of at least one VLAN in the system. Similarly, when a tagged port is a member of only one VLAN, the VLAN cannot be removed. In each of these cases, a warning message is displayed on the screen.

**Return to Port  
Attributes Configu-  
ration Menu**

Press **q** on this menu to return to the VLAN Configuration Menu.

Example of System  
With Tagging

The two-switch system shown in Figure 9-3 demonstrates the use of tagging to create some VLAN groups that can communicate with one another, and other groups that cannot communicate. By studying the figure, Table 9-4, and the descriptions that follow, you can learn the effects of tagging.

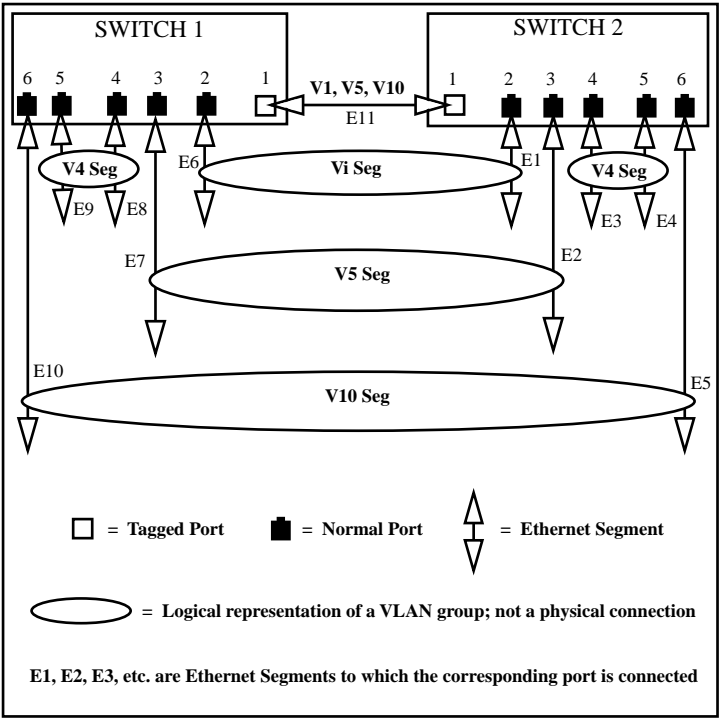


Figure 9-3 Example of a system with tagged (expansion) ports

Table 9-4 Configuration used in example of tagging

| Port # | VLAN Group Segment #s | Tagging  | Connection                |
|--------|-----------------------|----------|---------------------------|
| 1      | V1, V5, V10           | Enabled  | SW1 and SW2 connected     |
| 2      | V1                    | Disabled | SW1 and SW2 not connected |
| 3      | V5                    | Disabled | SW1 and SW2 not connected |
| 4      | V4                    | Disabled | SW1 and SW2 not connected |
| 5      | V4                    | Disabled | SW1 and SW2 not connected |
| 6      | V10                   | Disabled | SW1 and SW2 not connected |

### Status of Ethernet Segments in Example:

- ☐ All the stations on ethernet segment E1 and E6 can talk between themselves, but they can't talk with stations on other ethernet segments since E1 and E6 belong to VLAN Segment V1 and other ethernet segments do not belong to V1.
- ☐ All stations on E2 and E7 can talk between themselves and not with stations on other ethernet segments.
- ☐ All stations on E5 and E10 can talk between themselves and not with stations on other ethernet segments.
- ☐ Stations on E3 and E4 can talk only between themselves. Likewise stations on E8 and E9 can talk only between themselves.
- ☐ Though stations on E3, E4, E8 and E9 all belong to the same VLAN Segment, V4, the stations on E3 and E4 can't talk with stations on E9 and E10 since ethernet segment E11 does not belong to VLAN Segment V4.

## SNMP Management

For details of SNMP Management of VLANs on the IntraSwitch please refer to the sections on the following MIB objects:  
eSWVlanInfo group {eSWBasic and eSWPortCtrlTable  
group {eSWCtrl}, in asantesw.mib

# Troubleshooting

---

This section provides some diagnostic tips for troubleshooting problems with your network and the IntraSwitch

**LED Indicators**      The following table describes some possible errors and solutions for troubleshooting problems via the switch's LEDs.

| Power LED Error Type/Cause                                                          | Solution (Options or Steps)                                                                         |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Power LED does not come on when the power cord is connected to an outlet            |                                                                                                     |
| <input type="checkbox"/> AC power source is not operational.                        | <input type="checkbox"/> Check the AC power source.                                                 |
| <input type="checkbox"/> Power cord not connected/faulty.                           | <input type="checkbox"/> Connect/replace the power cord.                                            |
| <input type="checkbox"/> Internal power supply has failed.                          | <input type="checkbox"/> Return the unit for repair.                                                |
| Data LED for a port never comes on or never blinks                                  |                                                                                                     |
| <input type="checkbox"/> Cable connection is broken or faulty.                      | <input type="checkbox"/> Make sure the LINK LED is on; if the LINK LED is off check the cable.      |
| <input type="checkbox"/> Equipment to which the port is connected is not operating. | <input type="checkbox"/> Make sure the device to which the port is connected is operating properly. |



| Power LED Error Type/Cause                                                                    | Solution (Options or Steps)                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Link LED for the port goes off</b>                                                         |                                                                                                                                                                                                                |
| <input type="checkbox"/> Cable connection is broken.                                          | <input type="checkbox"/> Make sure connectors are seated correctly in the equipment at both ends of the cable. Check the continuity of the wires in the cable and the pin assignments on the RJ-45 connectors. |
| <input type="checkbox"/> Network station to which the port is connected has been powered off. | <input type="checkbox"/> Make sure the station to which the port is connected is plugged in and powered on.                                                                                                    |
| <input type="checkbox"/> Wrong type of cable is connected between the port and the equipment. | <input type="checkbox"/> Make sure the correct type of cable is connected to the port. See "Connecting to the Network" in Chapter 2.                                                                           |

## Technical Specifications

---

### Network Management Platforms Supported

- ☐ SNMP-compatible management software
- ☐ HTTP management software
- ☐ Telnet software

### LEDs

- |                                                     |                                       |
|-----------------------------------------------------|---------------------------------------|
| <input type="checkbox"/> 100Mbps operation          | <input type="checkbox"/> Link         |
| <input type="checkbox"/> Full Duplex                | <input type="checkbox"/> Power        |
| <input type="checkbox"/> Data                       | <input type="checkbox"/> MII 1, MII 2 |
| <input type="checkbox"/> Utilization<br>(6224 only) | (6216M only)                          |

### Connectors

- ☐ RS-232 (DB-9)
- ☐ RJ-45 (10Base-T and 100Base-TX)
- ☐ Company Short Name MII (Media Independent Interface) Modules optional (6216M only)

### Spanning Tree Support

- ☐ IEEE 802.1d

### MAC Address Table Size

- ☐ 8,192

### Download

- ☐ Network download
- ☐ Serial download

### Dimensions

- ☐ Width: 17.1 inches (434.3 mm)
- ☐ Height: 2.55 inches (64.8 mm)

## Technical Specifications

- ☐ Depth: 13.5 inches (342.9 mm)
- ☐ 1.5 RU [rack unit high]

### Weight

- ☐ 12 pounds (5.4 kg)

### Power Specifications

- ☐ Voltage range: 100 to 240 VAC
- ☐ Frequency range: 60/50 Hz
- ☐ Maximum current range (Base): 2A

### Environmental Specifications

- ☐ Temperature: 0° to 40° C
- ☐ Relative Humidity: 5% to 85% non-condensing

### Standards Compliance

- ☐ MIB II
- ☐ RMON (1 group)
- ☐ BootP
- ☐ DHCP
- ☐ IEEE 802.3
- ☐ IEEE 802.3u
- ☐ IEEE 802.1d
- ☐ Safety: UL, CSA, VDE, TUV
- ☐ Emissions: FCC Class B, EN55022, CEB
- ☐ RFC 1493
- ☐ Standard X, Y, Z modem serial protocols

### Mounting Options

- ☐ Rack Mounting: standard 19-inch equipment rack
- ☐ Desktop/Free-standing

## Technical Support

---

To contact Asanté Technical Support:

|                               |                                                           |
|-------------------------------|-----------------------------------------------------------|
| Telephone:                    | (800) 622-7464                                            |
| Fax:                          | (408) 432-6018                                            |
| Internet mail:                | <a href="mailto:suport@asante.com">suport@asante.com</a>  |
| World Wide Web site:          | <a href="http://www.asante.com">http://www.asante.com</a> |
| Bulletin Board Service (BBS): | (408) 432-1416                                            |
| FTP Archive:                  | <a href="ftp.Asanté.com">ftp.Asanté.com</a>               |

Technical Support Hours

6:00 A.M. to 5:00 P.M. Mountain Standard Time, Monday – Friday



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